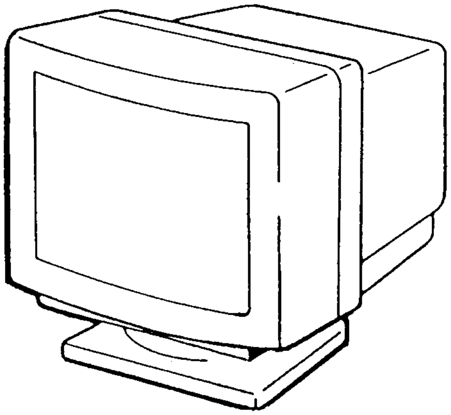
CPD-1304S

SERVICE MANUAL

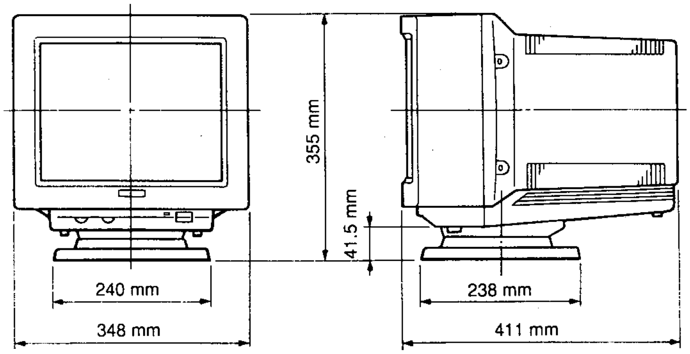
US Model
Canadian Model
Chassis No. SCC-E97A-A



Multiscan

SPECIFICATIONS

Picture tube	Super Fine Pitch Trinitron color tube 14-inch picture tube measured diagonally 90 degrees deflection Anti-glare dark screen Faceplate: non glare Conductive Silica Coating Phosphor P22 0.25 mm Aperture Grille Pitch
Viewable pixels	1024 × 768
Scanning frequency	Vertical sync signal frequency: 55 – 110 Hz Horizontal sync signal frequency: 28 – 57 kHz
Video input signal	Analog RGB positive 0.714 Vp-p/75Ω terminated Video band width: 60 MHz ±3 dB
Sync input	TTL level. Polarity free. Composite sync is acceptable at Pin # 13. Sync on green is acceptable.
Power requirements	100–120 V AC, Max. 1.8 A, 50–60 Hz
Dimensions	355(H) × 348(W) × 411(D) mm (14 × $13\frac{3}{4}$ × $16\frac{1}{4}$ inches)



Weight	Approx. 13.1 kg (30 lb 14 oz) Including the tilt-swivel
Supplied accessory	AC power cord (1)

Design and specifications subject to change without notice.

MULTISCAN®
COLOR COMPUTER DISPLAY

SONY®

MICROFILM

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Dangerously high voltage is present inside the unit. Do not open the cabinet. Refer servicing to qualified personnel only.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

SAFETY CHECK-OUT
(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

LEAKAGE TEST

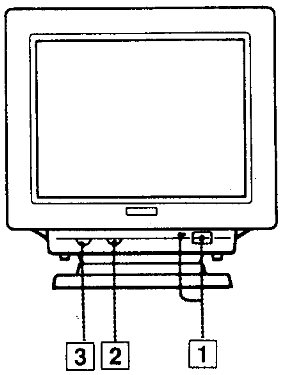
The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-

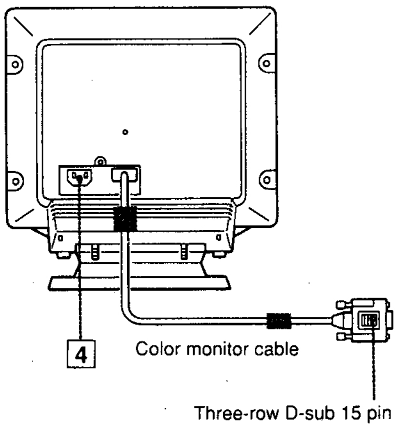
SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS

Front



Rear

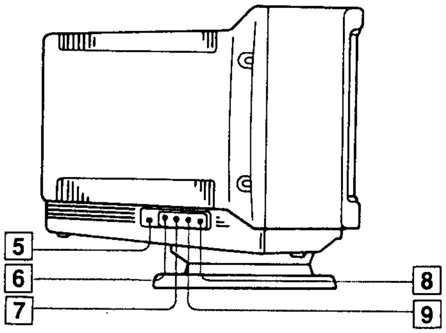


1 **POWER switch and indicator**
To turn on the power of the unit, press this switch. The indicator will light up. To turn off the unit, press it again.

2 **CONTRAST control (◑)**
Turn clockwise to increase contrast, or counterclockwise to decrease contrast.

3 **BRIGHTNESS control (○)**
Turn clockwise for a brighter display, or turn counterclockwise for a darker display.

4 **AC IN connector**
Connect to an AC outlet with the supplied AC power cord.



5 **AUTO SIZE switch**
Depending on the microcomputer connected to the display, set this switch to the appropriate position.

LOCK: For the IBM PS/2 microcomputer using the VGA mode. When this switch is set to LOCK, the timing is automatically adjusted to the VGA mode, and the H SIZE, H SHIFT, V SIZE and V CENT controls will have no effect.

ADJ: For other microcomputers having analog RGB output. When this switch is set to ADJ, adjust the display with the H SIZE, H SHIFT, V SIZE and V CENT controls.

Notes

- To adjust the horizontal frequencies of less than 40 kHz, set the AUTO SIZE switch to ADJ.
- To adjust the horizontal frequencies of 40 kHz or more, set the AUTO SIZE switch to either LOCK or ADJ.

6 **H SIZE (horizontal size) control**
Turn this control to adjust the horizontal size of the display.

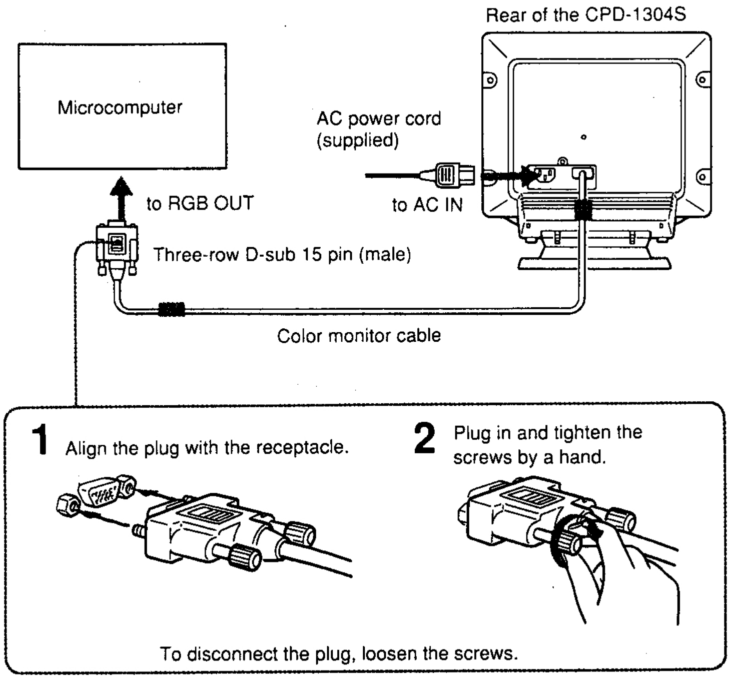
7 **H SHIFT (horizontal shift) control**
Turn this control to adjust the center of the display horizontally.

8 **V CENT (vertical center) control**
Turn this control to adjust the center of the display vertically.

9 **V SIZE (vertical size) control**
Turn this control to adjust the vertical size of the display.

1-2. CONNECTIONS

Connect the power cord and the color monitor cable.
Be sure to turn the power of the unit off before making the connection.

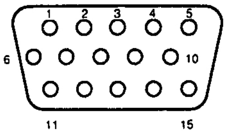

Rear of the CPD-1304S
Microcomputer
AC power cord
(supplied)
to RGB OUT
to AC IN
Three-row D-sub 15 pin (male)
Color monitor cable
1
2

1 Align the plug with the receptacle.

2 Plug in and tighten the screws by a hand.

To disconnect the plug, loosen the screws.

RGB Input Pin Assignment

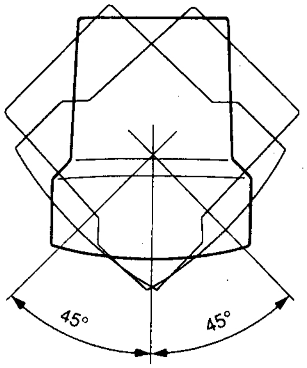

1
2
3
4
5
6
10
11
15

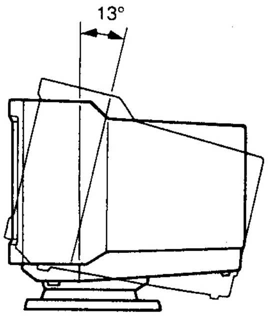
1	2	3	4	5	6	7	8	9
R	G	B	GND	GND	GND	GND	GND	—

10	11	12	13	14	15	
GND	GND	—	H SYNC	V SYNC	—	

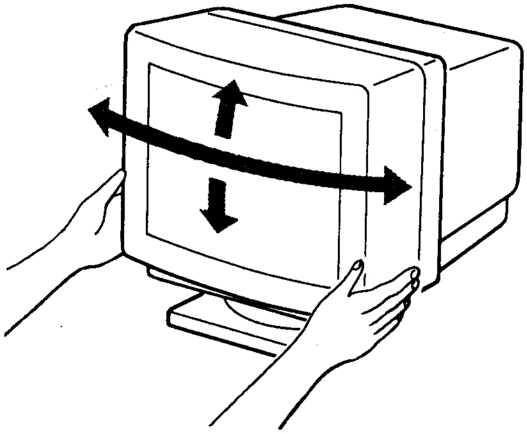
1-3. USE OF THE TILT-SWIVEL

With the tilt-swivel, this unit can be adjusted to be viewed at your desired angle within 90° horizontally and 13° vertically.





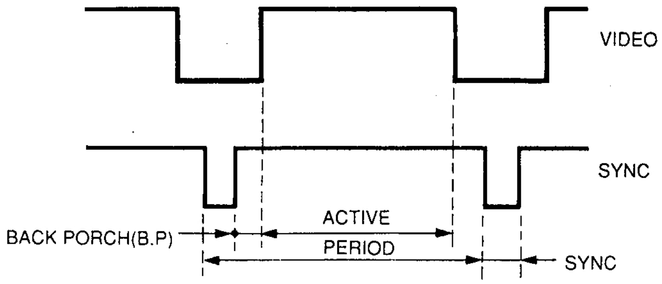
To turn the unit horizontally, hold it at its bottom with both hands as illustrated below.



1-4. TIMING CHART

The following timing chart shows approximate values.

MONITOR ACCEPTABLE TIMING EXAMPLE


VIDEO
SYNC
BACK PORCH(B.P)
ACTIVE
PERIOD
SYNC

$\boxed{1}$ VGA

		1	2	3
FREQ.	H (kHz)	31.47	31.47	31.47
	V (Hz)	70.1	70.1	59.9
H	PERIOD (μS)	31.78	→	→
	SYNC	3.81		
	B.P	1.91		
	ACTIVE	25.42		
V	PERIOD (H)	449	449	525
	SYNC	2	2	2
	B.P	34	59	32
	ACTIVE	400	350	480
SYNC POLARITY	H	NEGA	POSI	NEGA
	V	POSI	NEGA	NEGA
CLOCK FREQ.	(MHz)	25.175	25.175	25.175

$\boxed{2}$ 1024 × 768 interace (fh = 35.52 kHz/fv = 87 Hz)

FREQ.	H (kHz)	35.52
	V (Hz)	87.0
H	PERIOD (μS)	28.15
	SYNC	3.92
	B.P	1.25
	ACTIVE	22.81
V	PERIOD (H)	408.5
	SYNC	4
	B.P	20/20.5
	ACTIVE	384
SYNC POLARITY	H	POSI
	V	POSI
CLOCK FREQ.	(MHz)	44.900

$\boxed{1}$, $\boxed{2}$: When the AUTO SIZE switch is in the LOCK position, picture size is automatically adjusted for the above listed video modes ($\boxed{1}$, $\boxed{2}$).
All sizing controls on the left side of the monitor are therefore ineffective.
To adjust sizing for other video modes, change the switch to ADJ and adjust the controls.
Polarity free with the timing $\boxed{1}$, $\boxed{2}$ if the AUTO SIZE switch is not used.

$\boxed{3}$ 35 kHz non-interace (example)
800 × 600

FREQ.	H (kHz)	35.16
	V (Hz)	56.0
H	PERIOD (μS)	28.44
	SYNC	3.11
	B.P	2.67
	DISPLAY	22.22
V	PERIOD (H)	628
	SYNC	14
	B.P	7
	ACTIVE	600
CLOCK FREQ.	(MHz)	36.000

$\boxed{4}$ 48 kHz non-interace (example)
1024 × 768

FREQ.	H (kHz)	48.780
	V (Hz)	60.00
H	PERIOD (μS)	20.500
	SYNC	1.500
	B.P	2.000
	DISPLAY	16.000
V	PERIOD (H)	813
	SYNC	3
	B.P	39
	ACTIVE	768
CLOCK FREQ.	(MHz)	64.000

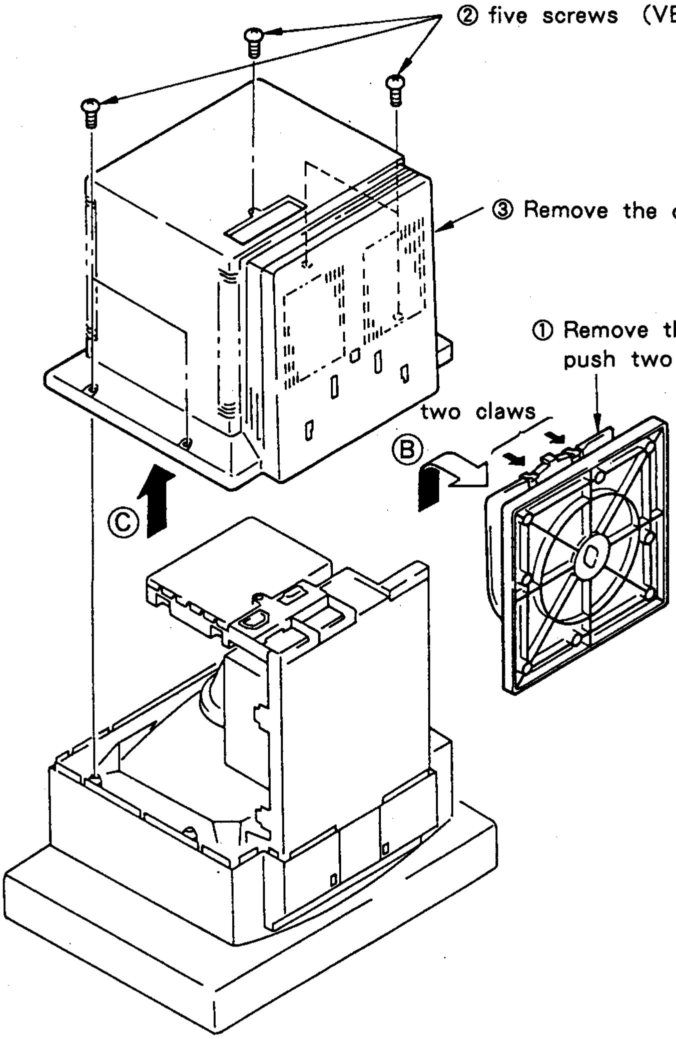
$\boxed{3}$, $\boxed{4}$: SYNC POLARITY FREE

$\boxed{5}$ 57 kHz non-interace
1024 × 768

FREQ.	H (kHz)	56.476
	V (Hz)	70.069
H	PERIOD (μS)	17.707
	SYNC	1.813
	B.P	1.920
	ACTIVE	13.653
V	PERIOD (H)	806
	SYNC	6
	B.P	29
	ACTIVE	768
SYNC POLARITY	H	NEGA
	V	NEGA
CLOCK FREQ.	(MHz)	75.000

SECTION 2
DISASSEMBLY

2-1. TILT AND CABINET REMOVAL

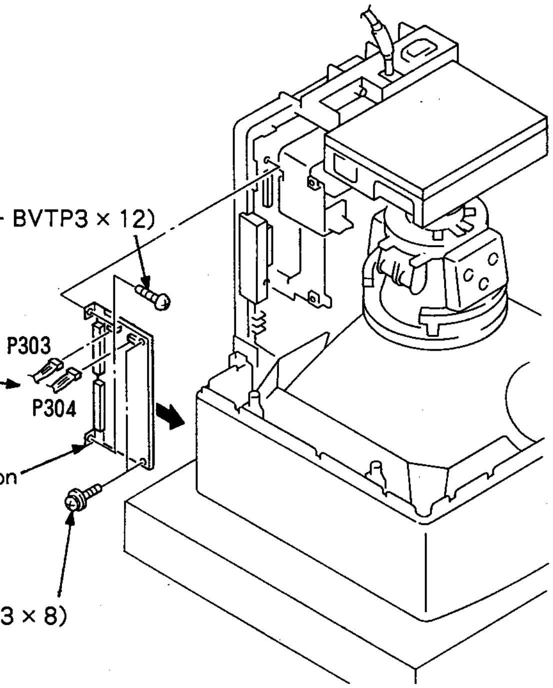


② five screws (VBTP4 × 16)

③ Remove the cabinet in the arrow Ⓒ direction.

① Remove the tilt in the arrow Ⓑ direction while push two claws.

2-2. DA (DC-1) BOARD REMOVAL



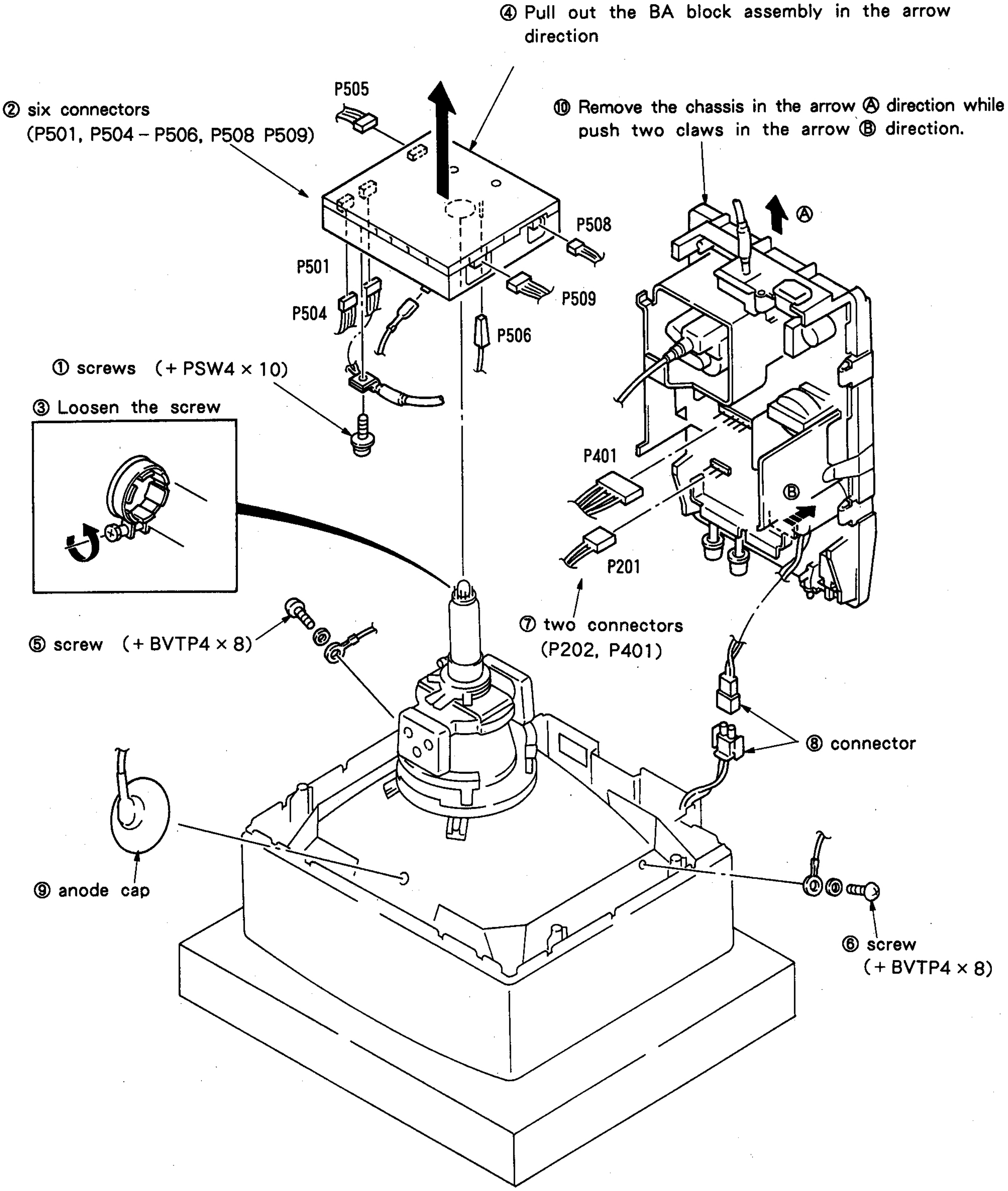
③ two screws (+ BVTP3 × 12)

① two connectors (P303, P304)

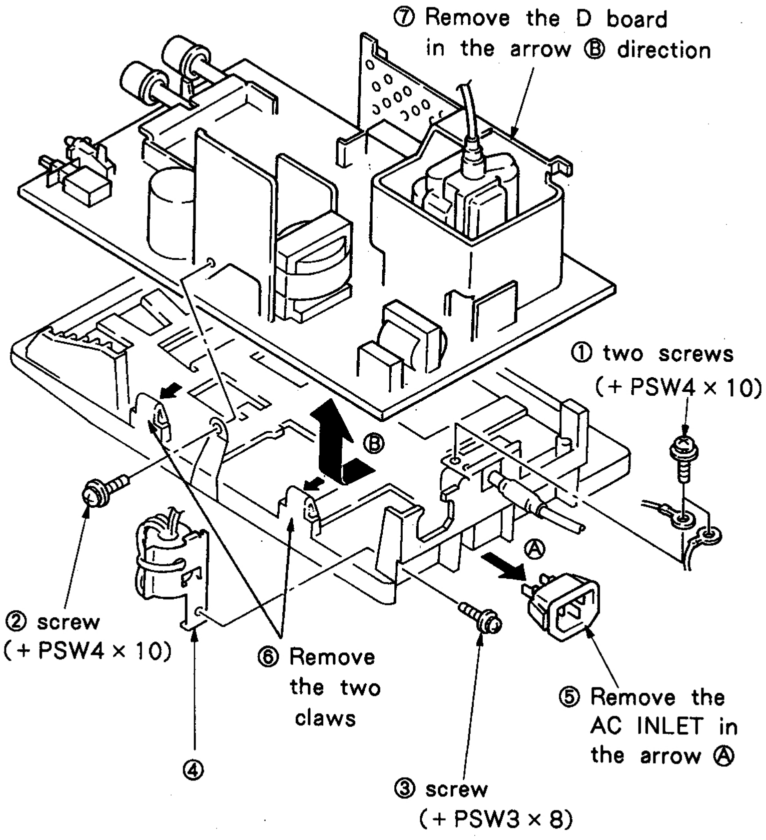
④ Remove the DA (DC-1) board in the arrow direction

② two screws (+ PSW3 × 8)

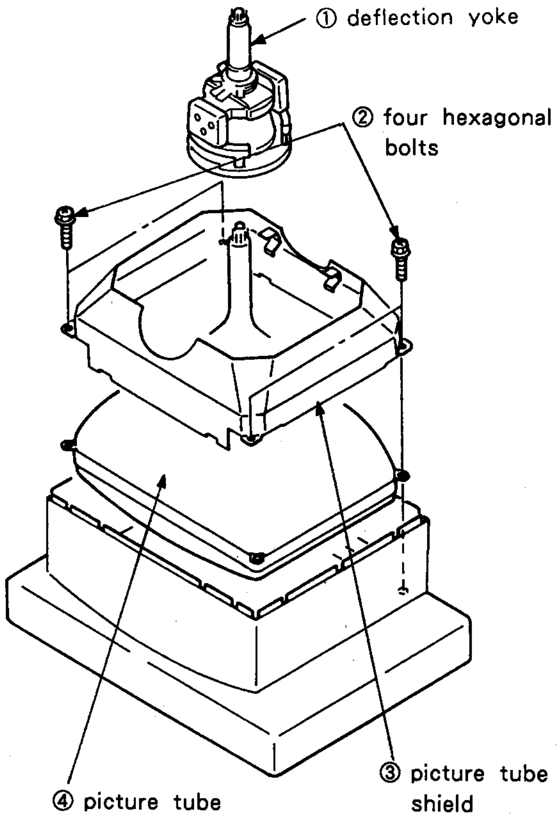
2-3. CHASSIS AND B BLOCK ASSEMBLY REMOVAL


④ Pull out the BA block assembly in the arrow direction
② six connectors (P501, P504 – P506, P508 P509)
P505
⑩ Remove the chassis in the arrow Ⓐ direction while push two claws in the arrow Ⓑ direction.
Ⓐ
P508
P501
P509
P504
P506
① screws (+ PSW4 × 10)
③ Loosen the screw
P401
Ⓑ
P201
⑤ screw (+ BVTP4 × 8)
⑦ two connectors (P202, P401)
⑧ connector
⑨ anode cap
⑥ screw (+ BVTP4 × 8)

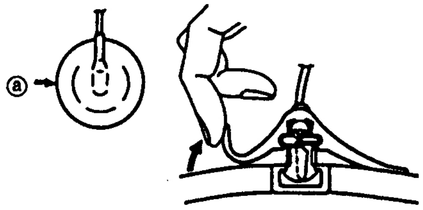
2-4. D BOARD REMOVAL


⑦ Remove the D board in the arrow Ⓑ direction
① two screws (+ PSW4 × 10)
Ⓑ
Ⓐ
② screw (+ PSW4 × 10)
⑥ Remove the two claws
⑤ Remove the AC INLET in the arrow Ⓐ
④
③ screw (+ PSW3 × 8)

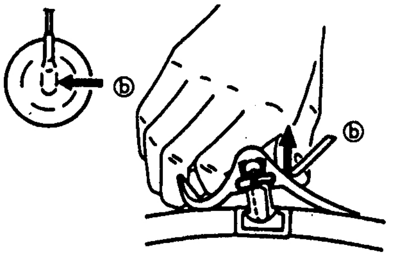
2-5. PICTURE TUBE REMOVAL


① deflection yoke
② four hexagonal bolts
④ picture tube
③ picture tube shield

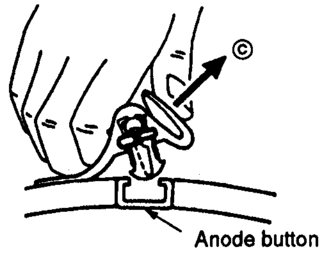
- **REMOVAL OF ANODE-CAP**
- **REMOVING PROCEDURES**



① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.


ⓒ
Anode button

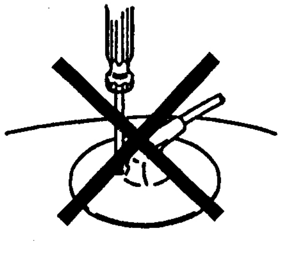
③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

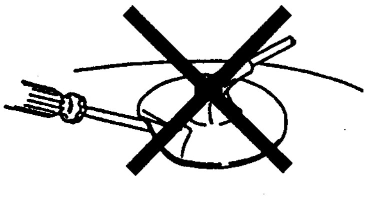
- **HOW TO HANDLE AN ANODE-CAP**

① Don't hurt the surface of anode-caps with sharp shaped material !

② Don't press the rubber hardly not to hurt inside of anode-caps !
A metal fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly !
The shatter-hook terminal will stick out or hurt the rubber.





SECTION 3
SET-UP ADJUSTMENT

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless ontherwise noted.

The control and switch below should be set as follows unless otherwise noted :

CONTRAST control ········· 80%
BRIGHTNESS control ······· 50%

Perform the adjustments in order as follows :

3-1. Beam Landing
3-2. Convergence
3-3. Focus
3-4. White Balance

Note : Test Equipment Required.

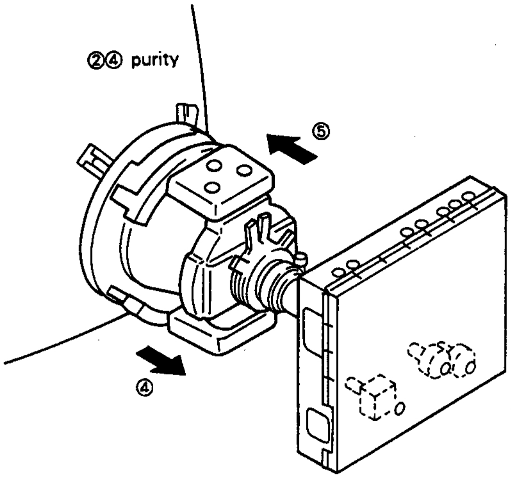
- Signal generator : VG807, VG809 ··· etc (Astro Design)
- Color Annalyzer
- Degausser

Preparation

- Face the PICTURE TUBE to east or west so as not to be influenced by magnetic force.
- Turn ON the POWER switch, and degauss the entire screen with degausser.

3-1. BEAM LANDING

1. Receive a signal of 480 LINE (f_H=31 kHz) with signal generater.
2. Adjust the white balance, convergence and focus coarsely, and then set purity controls to center position as shown in Fig. 3-1.
3. Switch over the signal generater to green.
4. Move the deflection yoke backward, and adjust purity magnet so that the green on the screen to become in the center of screen as shown in Fig. 3-2.
5. Move the deflection yoke foward, and adjust with so that the entire screen to become green entirely.
6. Switch over the signal to blue and green, and confirm the condition.
7. When landing at the corners is not right, correct by using the magnet (Fig. 3-3).


②④ purity
⑤
④

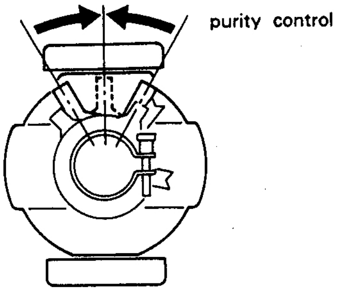

purity control

Fig. 3-1

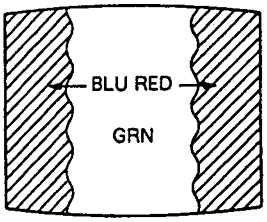


Fig. 3-2

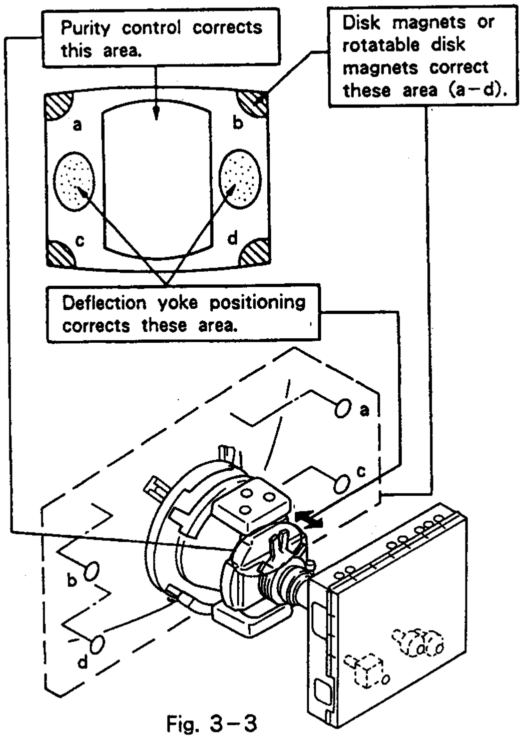

Purity control corrects this area.
Disk magnets or rotatable disk magnets correct these area (a-d).
a
b
c
d
Deflection yoke positioning corrects these area.
a
c
b
d

Fig. 3-3

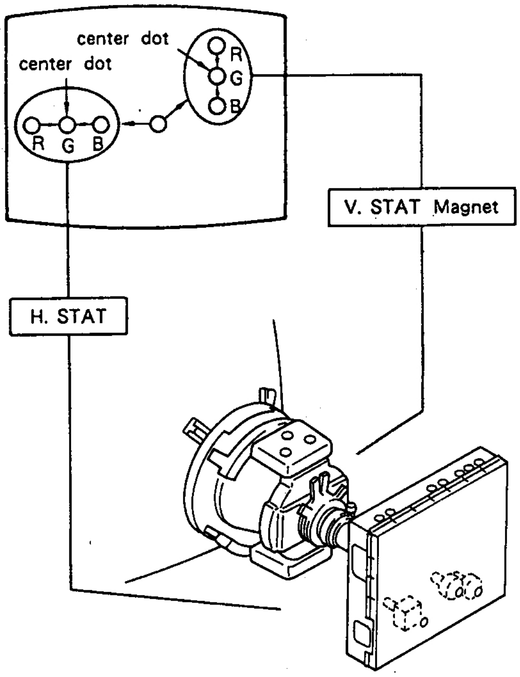
3-2. CONVERGENCE

(1) Horizontal and Vertical Static Convergence Adjustment on the Center of Screen.

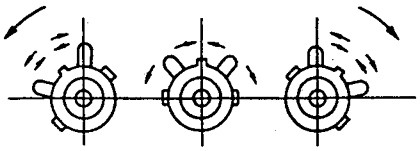
- Before starting, perform V. SIZE, V. CENT, H. SIZE, H. CENT and Screen Distortion adjustment rightly.

(Static Convergence Adjustment)

1. Receive a dot signal and Set CONTRAST to normal.
2. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen. (Horizontal movement)
3. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen. (Vertical movement)

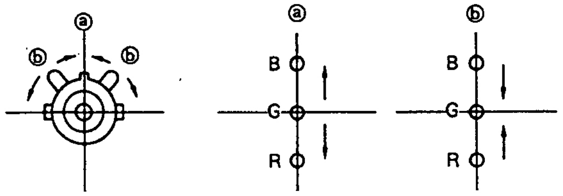


※ If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform adjustment using V. STAT at the same time while tracking.
(Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.)

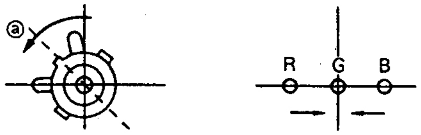


- When the V. STAT magnet is moved in the direction of arrow ⓐ and ⓑ, red, green and blue dots move as shown below.

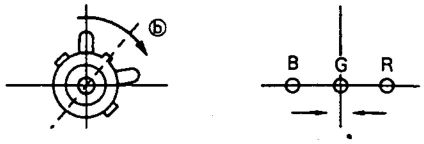
① When moving the V. STAT Magnet open or close.



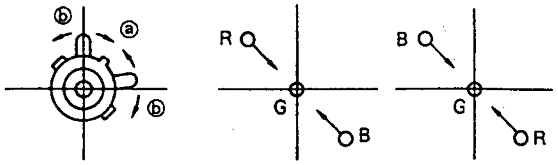
② When moving the V. STAT magnet counterclockwise.



③ When moving the V. STAT magnet clockwise.



④ When tilt the V. STAT magnet and open or close.

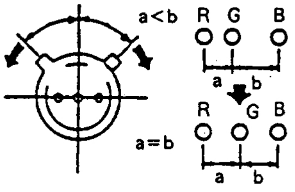


※ If the red and green dots do not coincide with blue dot, adjustment with BMC (6-poles) magnet.

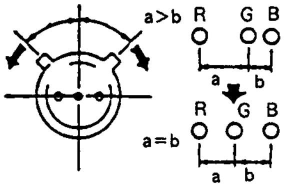
- **HMC and VMC correction for BMC (6-Poles) magnet.**

1. HMC (Horizontal Misconvergence) correction and motion of the Electron Beam with the BMC (6-poles) magnet.

HMC Correction (A)

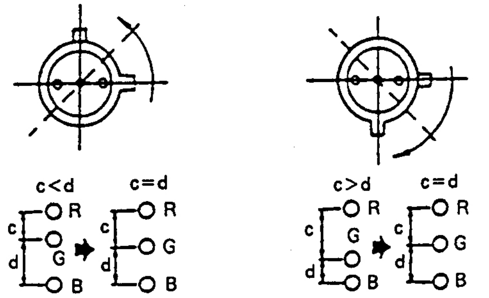


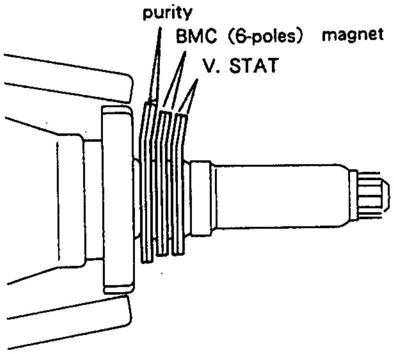
HMC Correction (B)



2. VMC (Vertical Misconvergence) correction and motion of the Electron Beam with the BMC (6-poles) magnet.

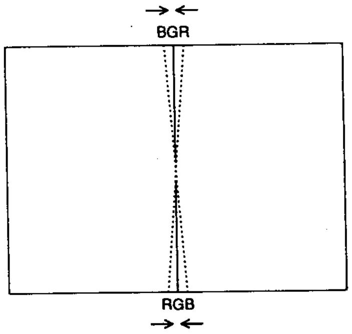
VMC Correction (A)   VMC Correction (B)

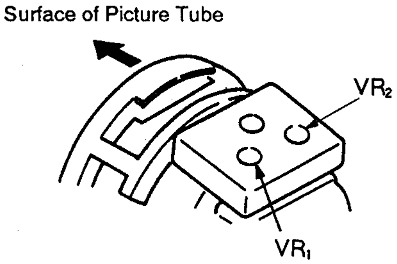

c<d
c=d
c>d
c=d
c
d
R
G
B


purity
BMC (6-poles) magnet
V. STAT

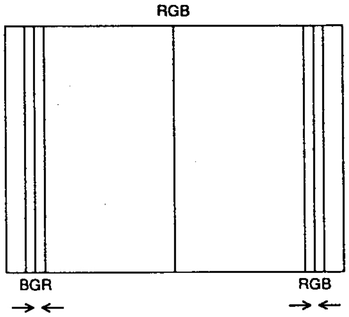
①Adjust the Y axis cross misconvergence.

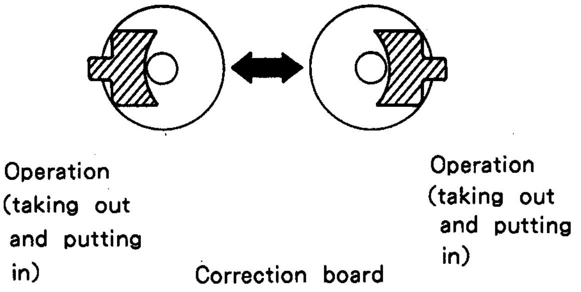
VR$_1$ Lower section correction
VR$_2$ Upper section correction




Surface of Picture Tube
VR$_2$
VR$_1$

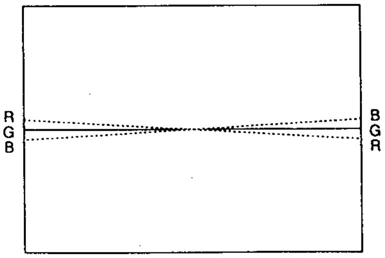
②H.TILT adjustment

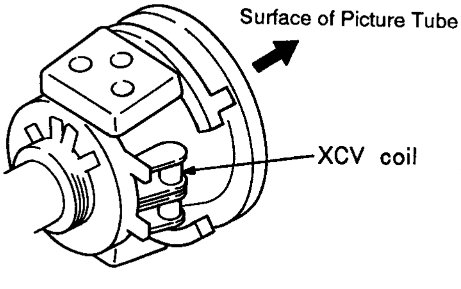



Operation (taking out and putting in)
Correction board
Operation (taking out and putting in)

Adjust so that the order of R, G, B is the same on both the right and left sides.

③Adjust the X axis cross misconvergence.



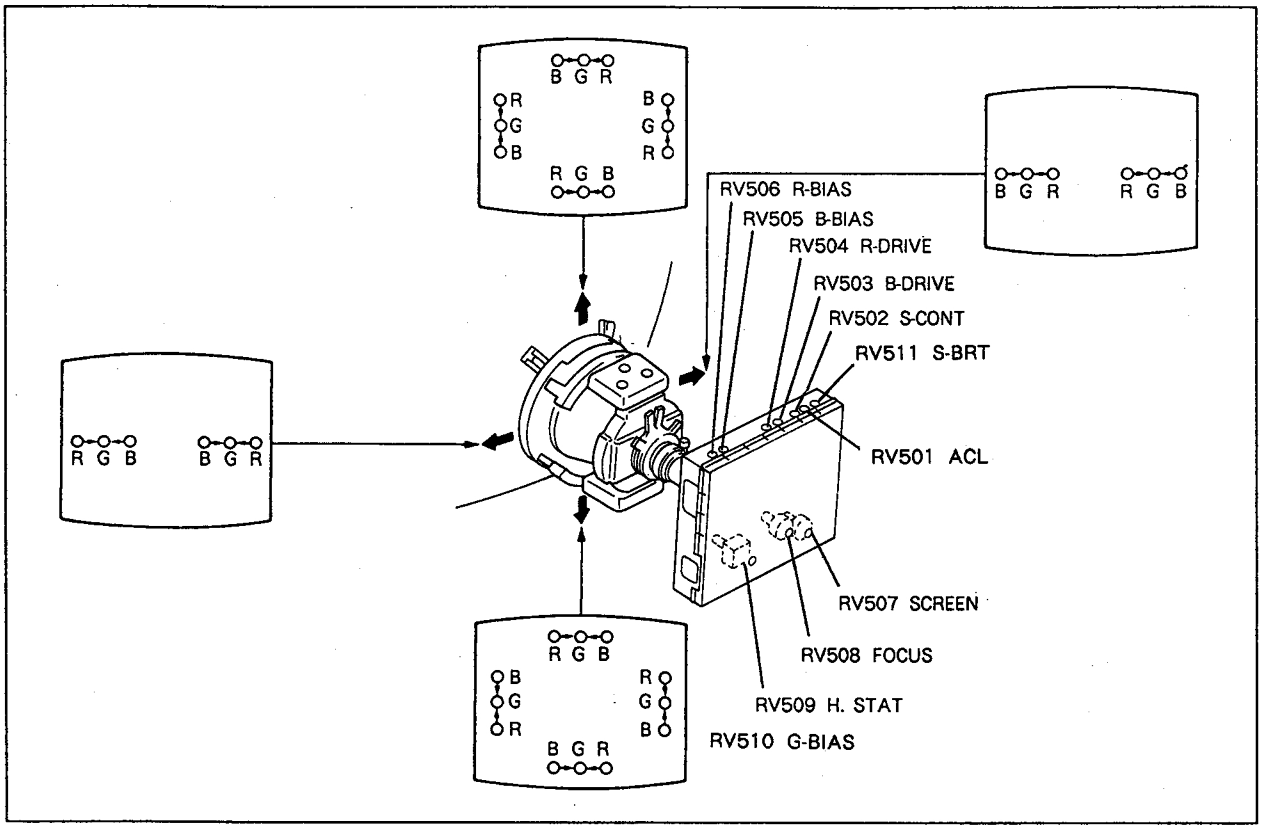

Surface of Picture Tube
XCV coil

Adjust so that the crosses of R and B disappear.

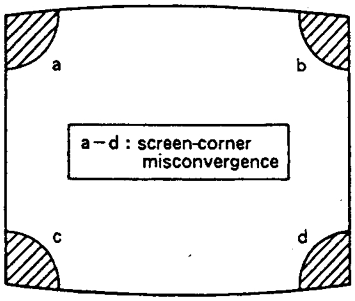
(2) Horizontal and Vertical Dynamic Convergence Adjustment the environs of the Screen

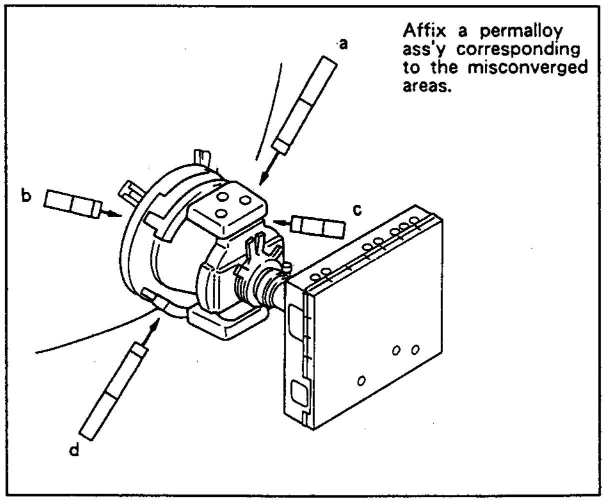
(Dynamic Convergence Adjustment)

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.


B G R
R G B
B G R
R G B
R G B
B G R
RV506 R-BIAS
RV505 B-BIAS
RV504 R-DRIVE
RV503 B-DRIVE
RV502 S-CONT
RV511 S-BRT
RV501 ACL
RV507 SCREEN
RV508 FOCUS
RV509 H. STAT
RV510 G-BIAS

(3) Screen-corner Convergence

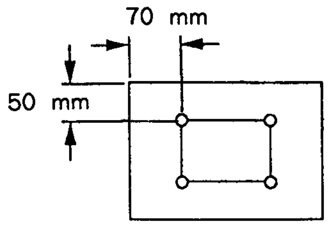

a
b
c
d
a – d : screen-corner misconvergence



Affix a permalloy ass'y corresponding to the misconverged areas.

3-3. FOCUS ADJUSTMENT

1. Turn the signal to 1024 × 768 ($f_H = 48kHz$).
2. Receive a dot signal.
3. Adjust FOCUS VR so that the following figure point for best focus.



3-4. WHITE BALANCE

Check that the size, position, distortion, and convergence have been adjusted, and that aging has been carried out for more than thirty minutes.

1. Receive the VGA GRAPHICS MODE (fH = 31. 5 kHz, 480 LINE).
2. Set the VRs as follows.

BRT	RV205	CENT
CONT	RV204	MAX
SUB-CONT	RV502	CENT
SUB-BRT	RV511	CENT
R-DRIVE	RV504	CENT
B-DRIBE	RV503	CENT
R-BIAS	RV506	MIN
G-BIAS	RV510	MIN
B-BIAS	RV505	MIN
ACL	RV501	MAX

3. Check that the size is as specified. After checking, change the VIDEO to a non signal.
   Horizontal 240 mm
   Vertical 180 mm
4. Use the SCREEN VR (attached to the FOCUS PACK) to display raster.
   Use R,G,B-BIAS VR to adjust any 1 ch VR to MIN, and adjust so that it becomes almost white (X = 0.283, Y = 0.298 approx. ± 0.05).
5. Use the SCREEN VR to adjust the raster to CUT-OFF.
6. Receive the VGA 31.5 kHz, 480 LINE, VIDEO 0.714 Vp-p ± 0.002.
7. Receive the white 6% output image rate, adjust the R, B-DRIVE VR so that the white balance becomes X = 0.283, Y = 0.298 and adjust the SUB-CONT VR so that the luminance becomes 130 nit.
8. Adjust the CONTRAST VR to MIN, and obtain the white balance at luminance 10 nit using R, G, B-BIAS VR.
   X = 0.283, Y = 0.298
   (Decrease it using the BRIGHT VR if luminance 10 nit cannot be obtained.)
9. Repeat steps 7 to 8, and obtain the white balances at 130 nit and 10 nit.
10. Receive the VIDEO non-signal, check that the raster is CUT-OFF with BRT CENTER, CONT MAX.
11. Receive the all white signal (VGA 31.5 Hz, 480 LINE), and adjust ACL VR (RV501) so that the luminance becomes 120 ± 12 at both BRT MAX and CONT MAX.

3-5. BRIGHT CONTROLLABLE CONFIRMATION

1. Input a signal of 480 LINE (f_H=31 kHz, entire-white, 0.714 Vp-p).
2. CONTRAST control ········· maximum
3. Confirm the variation of luminance signal when controlling BRIGHT volume as follows.
   1) Confirm the difference of luminance signal on maximum position as compared with the center click position is more than +5 NIT.
   2) Confirm the difference of luminance signal on minimum position as compared with the center click position is less than −5 NIT.

SECTION 4
SAFETY RELATED ADJUSTMENT

⧓RV402, HV REGULATER. HV HOLD-DOWN AND BEAM LIMIT CIRCUIT CONFIRMATION

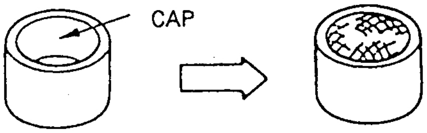
When replacing the following components (marked with ◪ on the schematic diagram), make this confirmation.

D BOARD················IC901, IC902, IC401, D930, C408, C409, C410, C412, C414, C415, C422, C424, R414, R434, R435, L406, T402 (FBT), T901, RV402, DY (Deflection Yoke)

DA (DC-1) BOARD··············IC101, IC301, D303, R327, R388

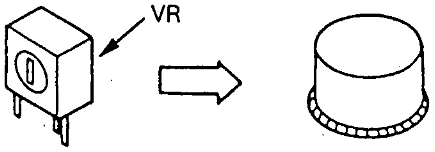
1. HV REGULATER CIRCUIT CONFIRMATION
   1) Receive a signal of $f_H = 48$kHz
   2) Set the CONT and BRIGHT controls to minimum. (Cut-Off condition).
   3) Connect a digital multimeter to pin ② of P402 on D board.
   4) Confirm the voltage is less than 6.48V DC.
   5) If step 4) is not satisfied, adjust them with RV402.
2. HV. HOLD-DOWN CIRCUIT CONFIRMATION
   1) Receive a signal of $f_H = 48$kHz.
   2) Set the CONT and BRIGHT controls to minimum. (Cut-Off Condition).
   3) Apply an external DC voltage gradually to pin ② of P402 on D board, confirm that the minimum voltage is less than 7.40 V DC where by the HOLD-DOWN circuit operates immediately and raster disappears.
3. BEAM LIMITER CIRCUIT CONFIRMATION
   1) Receive a signal of $f_H = 48$kHz.
   2) Adjust CONT and BRIGHT controls so that the screen luminance to become 100 NIT.
      CONT control·········· maximum
      BRIGHT control······· center
   3) Connect a digital multimeter to pin ① of P402 on D board.
   4) Confirm that the voltage is -2.80 ± 1.00 V DC
   5) Apply an external DC voltage gradually to pin ① of P402 on D board, and when the voltage becomes more than -11.30V, confirm the BEAM-LIMITER circuit operates and raster disappers.
      NOTE: After adjustment, cover on ⧓ RV402 with seal cap as follows.

① Insert in seal cap with RTV (silicone) as follows.



- seal cap (3-710-578-01)
- RTV (KE-490, 7-322-065-19)

② Cover the seal cap on RV402, and make paste together silicone and printed board.



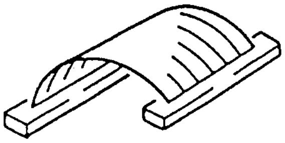
WARNING:
IF RV402 (sealed variable resistor) replacement is required, federal require that after adjustment the control is to be sealed so no further adjustment can be made to this resistor.

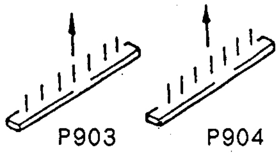
OVP CIRCUIT CONFIRMATION

When replacing following components, perform this confirmation.

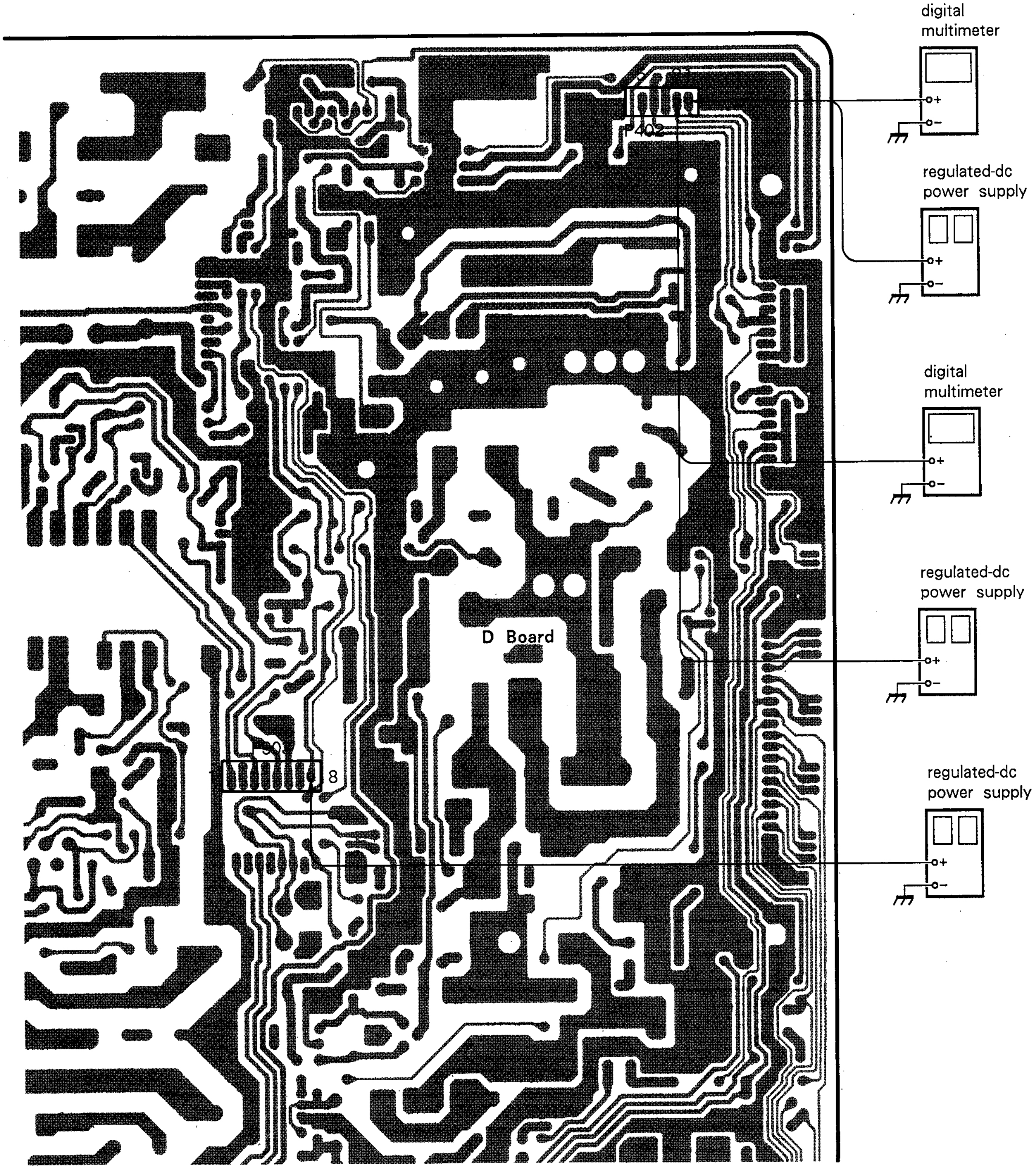
D BOARD········Q901, R922, R923, D927, D928, D929

1. Turn OFF the POWER switch.
2. Remove P903 and P904 connectors from D board.





3. Apply an external DC voltage of less than 216.00 V DC (SET UP THE CURRENT LIMITER TO 0.2 A) to pin ⑧ of P903 on D board for two second.
4. At the moment (item 3), confirm the OVP circuit operates immediately and an external DC voltage is drop by limiter operation.
5. If OVP circuit is not operate, check up Q901, R913, R914 and L906.


digital multimeter
regulated-dc power supply
digital multimeter
regulated-dc power supply
regulated-dc power supply
5
1
P402
8
D Board

SECTION 5
CIRCUIT ADJUSTMENTS

		VGA 1	VGA 2	VGA 3	8514
FREQUENCY	HORIZONTAL KHz	31.47	31.47	31.47	35.5
	VERTICAL Hz	70.1	70.1	59.94	86.96
HORIZONTAL	T1 μs	31.78	31.78	31.78	28.15
	T2 μs	3.81	3.81	3.81	3.92
	T3 μs	1.91	1.91	1.91	1.25
	T4 μs	25.42	25.42	25.42	22.81
VERTICAL	T1 H	449	449	525	408.5
	T2 H	2	2	2	4
	T3 H	60	35	33	20.5
	T4 H	350	400	480	384
SYNC POLARITY	HORIZONTAL	POSITIVE	NEGATIVE	NEGATIVE	POSITIVE
	VERTICAL	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
CLOCK	MHz	25.175	25.175	25.175	44.900
RESOLUTION	H × V	640 × 350	720 × 400	640 × 480	1024 × 768
MODE		NO INTERLACE	NO INTERLACE	NO INTERLACE	INTERLACE

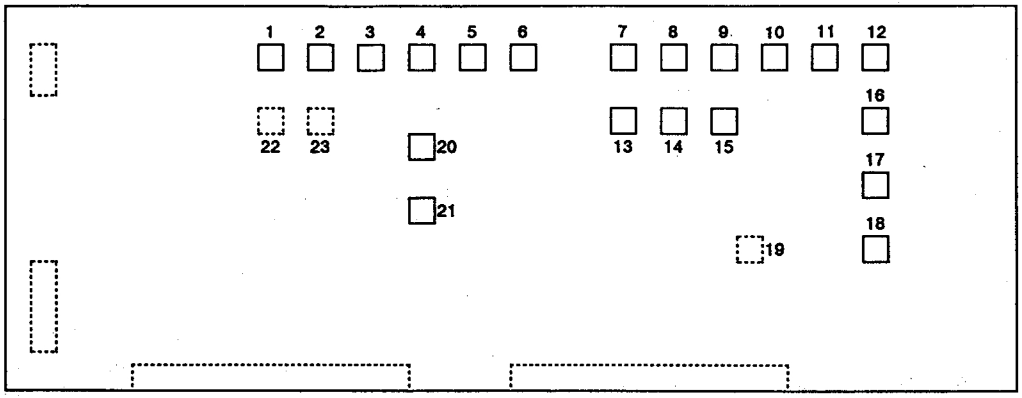
T1 : PERIODE, T2 : SYNC, T3 : BACK PORCH, T4 : ACTIVE

		Mac II	48KHz	57KHz
FREQUENCY	HORIZONTAL KHz	35.01	48.78	56.476
	VERTICAL Hz	66.7	60	70.069
HORIZONTAL	T1 μs	28.56	20.5	17.707
	T2 μs	2.12	1.5	1.813
	T3 μs	3.16	2.0	1.920
	T4 μs	21.16	16.0	13.653
VERTICAL	T1 H	525	813	806
	T2 H	3	3	6
	T3 H	39	39	29
	T4 H	480	768	768
SYNC POLARITY	HORIZONTAL	POSITIVE/NEGATIVE	NEGATIVE	NEGATIVE
	VERTICAL	POSITIVE/NEGATIVE	NEGATIVE	NEGATIVE
CLOCK	MHz	30.25	64.000	75.000
RESOLUTION	H × V	640 × 480	1024 × 768	1024 × 768
MODE		NO INTERLACE	NO INTERLACE	NO INTERLACE

T1 : PERIODE, T2 : SYNC, T3 : BACK PORCH, T4 : ACTIVE

5-1. DA (DC-1) BOARD ADJUSTMENT

DA (DC-1) VR POSITION



No.	Adjustment	Reference	Settings during VGA switch locked
1	SIDE PIN (L)	RV307	
2	SIDE PIN (H)	RV310	
3	PARA CORE	RV308	
4	PIN PHASE	RV309	
5	PIN UP	RV313	
6	PIN BAL	RV311	
7	HORIZONTAL POSITION (L)	RV304	(LOCK)
8	HORIZONTAL SIZE (L)	RV306	(LOCK)
9	VERTICAL SIZE (L_1)	RV252	480 LINE (LOCK)
10	VERTICAL SIZE (L_2)	RV253	400 LINE (LOCK)
11	VERTICAL SIZE (L_3)	RV254	350 LINE (LOCK)
12	VERTICAL POSITION	RV255	
13	HORIZONTAL POSITION (M)	RV303	during receiving 8514 (LOCK)
14	HORIZONTAL SIZE (M)	RV305	during receiving 8514 (LOCK)
15	VERTICAL SIZE (M)	RV251	during receiving 8514 (LOCK)
16	User VR setting (1)	RV257	
17	User VR setting (2)	RV256	
18	User VR H size maximum value setting	RV312	
19	20V setting	RV314 (*)	
20	F_0 setting (FH = Max)	RV301	
21	F_0 setting (FH = Min deviation correction)	RV302	
22	F-V conversion voltage setting (6V during FH = Max)	RV601 (*)	
23	Frequency setting of relay switchover signal (40 kHz)	RV602 (*)	

(*) indicate DA (DC-1) board manufacturer adjustment

H fo ADJUSTMENT (RV301, RV302)

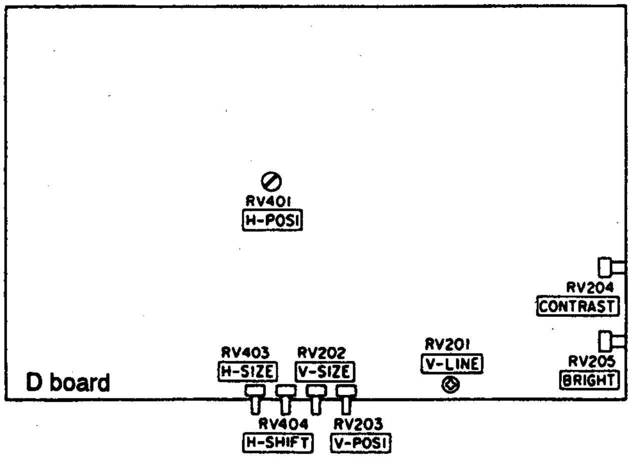
[57 kHz]

1. Receive a signal of 57 kHz.
2. Short circuit between pin ① and pin ③ of TP301 with a jumper wire.
3. Connect a frequency counter across collector of Q402 and ground.
4. Adjust RV301 (FH MIN) 31.47 Hz ±500 Hz on the frequency counter.

[31 kHz]

1. Receive a signal of 31 kHz.
2. Short circuit between pin ① and pin ③ of TP301 with a jumper wire.
3. Connect a frequency counter across collector of Q402 and ground.
4. Adjust RV302 (FH MIN) for 31.47 kHz ±500 Hz on the frequency counter.

5-2. D AND DA (DC-1) BOARD ADJUSTMENT



H. POSITION (RV401, SW401)

1. Input a cross-hatch signal of 48 kHz.
2. Display a back-raster on the screen with G2 VR.
3. Adjust RV401 (H. POSI) so that the back-raster position to come center.
4. In case of the back-raster is not move till center, using SW401 (H. POSI TAP SW).

V. LINE, V. SIZE, V. POSI (RV201, RV202, RV203)

1. Input a cross-hatch signal of 48 kHz.
2. Adjust RV203 (V. POSI) so that the vertical position to come center.
3. Adjust vertical linearity with RV201 (V. LINE).
4. Adjust vertical size with RV202 (V. SIZE).

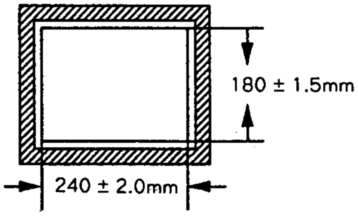
H. SIZE, LIMITER (RV403, RV312)

1. Input a cross-hatch signal of 48 kHz.
2. Rotate RV403 (H. SIZE) from maximum to minimum, and then observe the local strain.
3. In case of a local strain occuring on the screen, adjust them with RV312 (H. S LIMIT) on DA (DC-1) board.
4. Input a cross-hatch signal of 31 kHz (48 LINE).
5. Switch over AUTO SIZE SW to ADJ position.
6. Turn RV403 (H. SIZE) from maximum to minimum, and then observe the local strain.
7. In case of a local strain occuring on the screen, adjust them with RV312 (H. S LIMIT) on DA (DC-1) board.

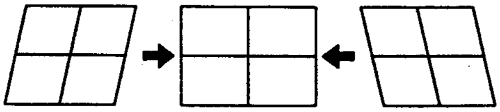
48 kHz, DEFLECTION SYSTEM ADJUSTMENT

* Input a cross-hatch signal of 48 kHz as following adjustment.

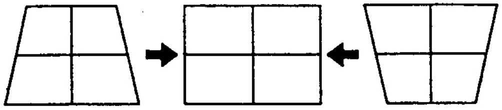
- H. SIZE (RV403)
  Adjust RV403 (H. SIZE) on D board so that the horizontal size to become 240 ± 2.0mm.



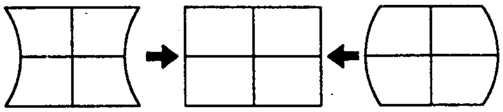
- PARA CORE (RV308)
  Adjust direct association and parallelogram strain with RV308 (PARA CORE) on DA (DC-1) board.



- PIN PHASE (RV309)
  Adjust trapezoidal strain with RV309 (PIN PHASE) on DA (DC-1) board.

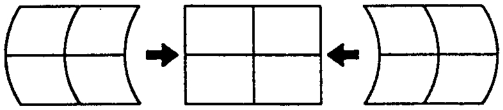


- SIDE PIN (RV310)
  Adjust pin cushion strain about right and lwft with RV310 (SIDE PIN) on DA (DC-1) board.

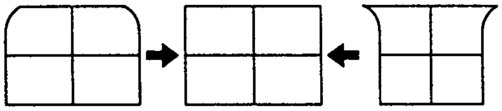


NOTE: In case of pin cushion strain of right and left rate is differ, correct them with RV311 (PIN BAL) too.

- PIN BAL (RV311)
  Adjust PIN balance strain with RV311 (PIN BAL) on DA (DC-1) board.



- PIN UP (RV313)
  Adjust upper PIN strain with RV313 (PIN UP) on DA (DC-1) board.



〈GRAPHIC MODE〉

31 kHz, H. PHASE, H. SIZE (RV304, RV305)

Switch over AUTO SIZE SW to LOCK position.

1. Input a cross-hatch signal of GRAPHIC mode (31 kHz, 480 LINE).
2. Adjust RV304 (H. PHASE (L)) so that the horizontal direction of screen to come center.
3. Adjust RV306 (H. SIZE (L)) so that the horizontal size to become 240 ± 2.0mm

〈GRAPHIC MODE〉

31 kHz, V POSI, V SIZE (RV255, RV252)

Switch over AUTO SIZE SW to LOCK position.

1. Input a cross-hatch signal of GRAPHIC mode (31 kHz, 480 LINE).
2. Adjust RV255 (V. POSI (L)) so that the vertical direction of screen to come center.
3. Adjust RV252 (V SIZE (L1)) so that the vertical size to become 180 ± 1.5mm

〈GRAPHIC MODE〉

31 kHz, PIN AMP (RV307)

1. Input a cross-hatch signal of GRAPHIC mode (31 kHz, 480 LINE).
2. Adjust RV307 (SIDE PIN (LOW)) so that the right and left becomes straight line.
3. Correct the H. SIZE with RV305 (H. SIZE (L)), confirm they have not strain.

31 kHz AND 48 kHz, STRAIN CORRECTION (RV308, RV309, RV311, RV313)

1. Adjust RV308 (PARA CORE), RV309 (PIN PHASE), RV311 (PIN BAL) and RV313 (PIN UP) to become best condition about both 31 kHz (480 LINE) mode and 48 kHz mode.

TEXT MODE (31 kHz, 400 LINE) V. SIZE (RV253)

Switch over AUTO SIZE SW to LOCK position.

1. Input a cross-hatch signal of 31 kHz (400 LINE).
2. Adjust RV253 (V. SIZE) so that the vertical size to become 180 ± 1.5mm

※ Regarding V. POSI adjustment, GRAPHIC mode (31 kHz, 480 LINE) adjustment take priority of another adjustment, and perform adjustment only V. SIZE.

EGA EMULATE MODE (31 kHz, 350 LINE) V. SIZE (RV254)

Switch over AUTO SIZE SW to LOCK position.

1. Input a cross-hatch signal of 31 kHz (350 LINE).
2. Adjust RV254 (V. SIZE (L2)) so that the vertical size to become 180 ± 1.5mm

※ Regarding V. POSI adjustment, GRAPHIC mode (31 kHz, 480 LINE) adjustment take priority of another adjustment, and perform adjustment only V. SIZE.

8514 MODE (35 kHz) H. PHASE, H. SIZE (RV303, RV306)

Switch over AUTO SIZE SW to LOCK position.

1. Input a cross-hatch signal of 35 kHz (8514).
2. Adjust H. PHASE and H SIZE with RV303 (H PHASE (M)) and RV305 (H SIZE (M)).

8514 MODE (35 kHz) V. SIZE (RV251)

Switch over AUTO SIZE SW to LOCK position.

1. Input a cross-hatch signal of 35 kHz (8514).
2. Adjust RV251 (V. SIZE (M)) so that the vertical size to become 180 ± 1.5mm

※ Regarding V. POSI adjustment, GRAPHIC mode (31 kHz, 480 LINE) adjustment take priority of another adjustment, and perform adjustment only V. SIZE.

EACH FREQUENCY (MODE) CONFIRMATION

Confirm screen size and position strain are not sliding, and confirm each mode about TEXT (31 kHz, 400 LINE), EGA emulate (31 kHz, 350 LINE), GRAPHIC (31 kHz, 480 LINE), 8514 (35 kHz) and 48 kHz, 57 kHz.

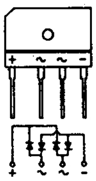
H. SIZE VARIABLE EXTENT ADJUSTMENT (RV312)

1. Input a cross-hatch signal of 800×600 (35 kHz).
2. Switch over AUTO SIZE SW (SW402) to ADJ position.
3. Set RV202 (V. SIZE) of user volume to minimum.
4. Adjust RV403 of user volume and RV312 (HS LIMIT) so that the horizontal size to become maximum.
5. Adjust RV312 (HS LIMIT) so that the horizontal size to become 250 ±2 mm.
6. Input a cross-hatch signal of GRAPHIC mode (31 kHz, 480 LINE).
7. Set RV403 (H. SIZE) of user volume to maximum and RV202 (V. SIZE) to mnimum.
8. When item 7, confirm they have not local strain.
9. Input a cross-hatch signal of 48 kHz.
10. When set RV403 (H. SIZE) of user volume to minimum, confirm horizontal size is less than 232 mm.
11. When set RV202 (V. SIZE) of user volume to maximum, confirm they have not local strain.

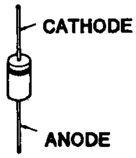
800×600 MODE ADJUSTMENT

1. Input a cross-hatch signal of 800×600 (35 kHz).
2. Adjust RV403 (H. SIZE) so that the horizontal size to become 240 ± 2.0mm
3. Adjust RV404 (H. SHIFT) so that the horizontal direction to come center position.
4. Adjust RV202 (V. SIZE) so that the vertical size to become 180 ± 1.5mm
5. Set RV203 (V. POSI) to center click point.
6. Adjust the vertical position with RV256 (SUB POSI 1) and RV257 (SUB POSI 2).
   ※ When perform adjustment, make move RV256 to upper side or RV257 to lower side.
7. Rotate RV203, and confirm they are moved more than 3.0 mm.

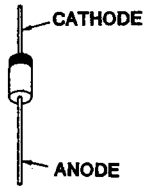
D5SB60



EG01
EU2A
EU2YX
EU2Z
RD11EB1
RD12EB2
RD15EB2
RD18FB2
RD27EB2
RD27FB2
RD5.6EB2
RD6.2EB2
RD6.8EB-TA11R
RD9.1EB2
1SS83
1S1588


CATHODE
ANODE

EG01Y
EP01C
RP1H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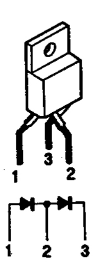
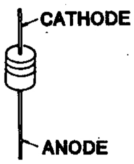
ANODE

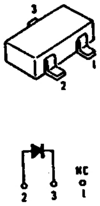
ESC011M-15



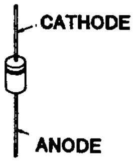
RD11ESB1
RD12ESB2
RD15ESB2
RD27ESB2
RD5.6ESB2
RD6.2ESB2
RD9.1ESB2
1SS177


CATHODE
ANODE

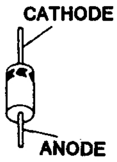
RD18MB2
RD5.1MB2
RD5.6MB2
RD6.6MB2
1SS184
1SS193



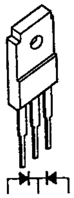
RG2
RK14


CATHODE
ANODE

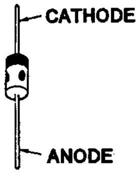
RU-4DS


CATHODE
ANODE

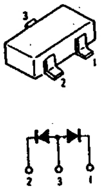
SB50-09J



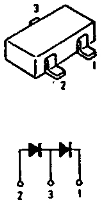
S5688B
S5688G


CATHODE
ANODE

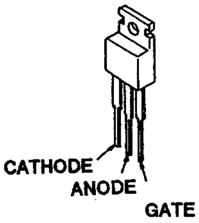
1SS181



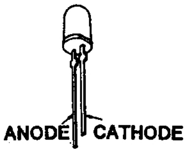
1SS226



5P-4M


CATHODE
ANODE
GATE

GL5EG8


ANODE
CATHODE

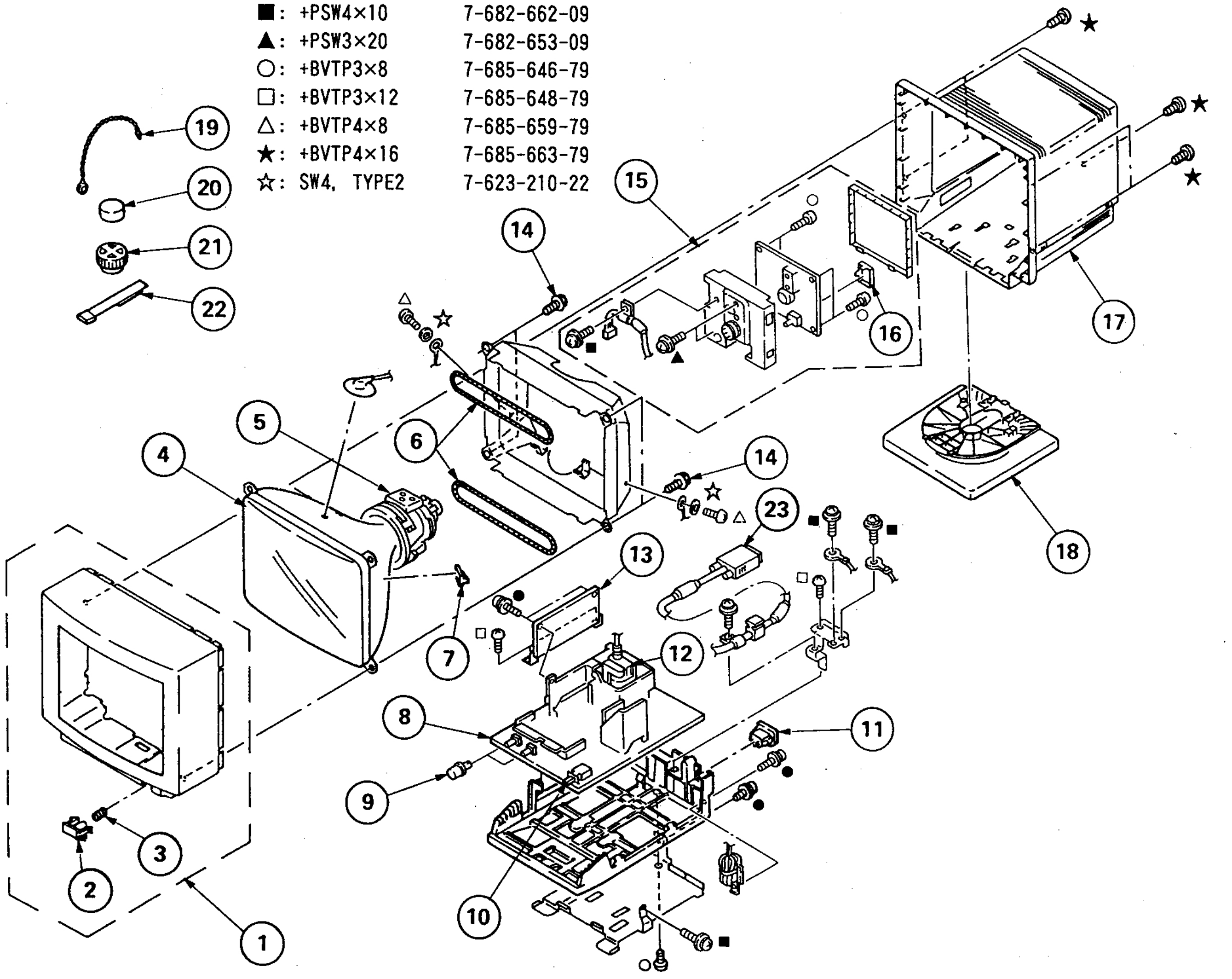
SECTION 7
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

●: +PSW3×8	7-682-978-01
■: +PSW4×10	7-682-662-09
▲: +PSW3×20	7-682-653-09
○: +BVTP3×8	7-685-646-79
□: +BVTP3×12	7-685-648-79
△: +BVTP4×8	7-685-659-79
★: +BVTP4×16	7-685-663-79
☆: SW4, TYPE2	7-623-210-22



B

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- The components identified by ☒ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- ✱ : Selected to yield optimum performance.
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

REF.NO.	PART NO.	DESCRIPTION				REMARK
	A-1481-045-A	B BOARD, COMPLETE *****************				
		<CAPACITOR>				
C501	1-137-370-11	MYLAR	0.01MF	5%	50V	
C502	1-137-370-11	MYLAR	0.01MF	5%	50V	
C503	1-137-370-11	MYLAR	0.01MF	5%	50V	
C505	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C508	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C509	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C510	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C511	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C513	1-124-034-51	ELECT	33MF	20%	16V	
C514	1-161-772-11	CERAMIC	0.1MF	10%	25V	
C519	1-102-973-00	CERAMIC	100PF	5%	50V	
C520	1-102-973-00	CERAMIC	100PF	5%	50V	
C521	1-102-973-00	CERAMIC	100PF	5%	50V	
C522	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C523	1-162-901-21	CERAMIC	0.1MF	10%	50V	
C524	1-124-477-11	ELECT	47MF	20%	16V	
C525	1-124-477-11	ELECT	47MF	20%	16V	
C526	1-126-101-11	ELECT	100MF	20%	16V	
C527	1-130-483-00	MYLAR	0.01MF	5%	50V	
C528	1-102-525-11	CERAMIC	68PF	5%	50V	
C531	1-124-119-00	ELECT	330MF	20%	16V	
C532	1-124-931-11	ELECT	47MF	20%	100V	
C533	1-124-666-11	ELECT	4.7MF	20%	250V	
C534	1-126-772-11	ELECT	1MF	20%	250V	
C535	1-126-772-11	ELECT	1MF	20%	250V	
C536	1-126-772-11	ELECT	1MF	20%	250V	
C537	1-108-686-11	MYLAR	0.0033MF	10%	200V	
C538	1-108-686-11	MYLAR	0.0033MF	10%	200V	
C539	1-108-686-11	MYLAR	0.0033MF	10%	200V	
C540	1-136-209-11	FILM	0.1MF	10%	250V	
C541	1-136-209-11	FILM	0.1MF	10%	250V	
C542	1-136-209-11	FILM	0.1MF	10%	250V	
C543	1-136-209-11	FILM	0.1MF	10%	250V	
C544	1-162-978-11	CERAMIC	0.01MF		2KV	
C545	1-162-978-11	CERAMIC	0.01MF		2KV	
C546	1-162-116-00	CERAMIC	680PF	10%	2KV	
C547	1-162-116-00	CERAMIC	680PF	10%	2KV	
		<DIODE>				
D501	8-719-820-58	DIODE 1SS177				
D502	8-719-820-58	DIODE 1SS177				
D503	8-719-820-58	DIODE 1SS177				
D504	8-719-110-31	DIODE RD12ES-B2				
D505	8-719-820-58	DIODE 1SS177				
D507	8-719-109-93	DIODE RD6.2ES-B2				
D508	8-719-820-58	DIODE 1SS177				
D510	8-719-820-58	DIODE 1SS177				
D511	8-719-820-58	DIODE 1SS177				
D512	8-719-901-83	DIODE 1SS83				
D513	8-719-901-83	DIODE 1SS83				
D514	8-719-901-83	DIODE 1SS83				
D515	8-719-901-83	DIODE 1SS83				
D516	8-719-901-83	DIODE 1SS83				
D517	8-719-901-83	DIODE 1SS83				
D518	8-719-901-83	DIODE 1SS83				
D519	8-719-901-83	DIODE 1SS83				
D520	8-719-901-83	DIODE 1SS83				
D521	8-719-820-56	DIODE S5688B				
D522	8-719-820-58	DIODE 1SS177				
D523	8-719-820-58	DIODE 1SS177				
D524	8-719-820-58	DIODE 1SS177				
D525	8-719-820-58	DIODE 1SS177				
D526	8-719-820-58	DIODE 1SS177				
D527	8-719-820-58	DIODE 1SS177				
		<IC>				
IC501	8-752-052-83	IC CXA1209P				
IC502	8-749-922-81	IC VPS07T				
		<COIL>				
L503	1-410-396-41	INDUCTOR	0.45UH			
L506	1-410-396-41	INDUCTOR	0.45UH			
L510	1-410-396-41	INDUCTOR	0.45UH			
L519	1-410-396-41	INDUCTOR	0.45UH			
L520	1-410-396-41	INDUCTOR	0.45UH			
		<CONNECTOR>				
P501	*1-560-894-00	PIN, CONNECTOR 6P				
P504	*1-560-895-00	PIN, CONNECTOR 7P				
P505	*1-564-031-00	PIN, CONNECTOR 6P				
P508	*1-564-028-00	PIN, CONNECTOR 3P				
P509	*1-564-031-00	PIN, CONNECTOR 6P				
		<TRANSISTOR>				
Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q502	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q503	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q504	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q505	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q506	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q507	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q508	8-729-200-17	TRANSISTOR 2SA1091-O				
Q509	8-729-200-17	TRANSISTOR 2SA1091-O				
Q510	8-729-200-17	TRANSISTOR 2SA1091-O				

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q511	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q512	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q513	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q514	8-729-119-78	TRANSISTOR 2SC2785-HFE				

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R501	1-214-702-00	METAL	75	1%	1/4W	
R502	1-214-702-00	METAL	75	1%	1/4W	
R503	1-214-702-00	METAL	75	1%	1/4W	
R504	1-249-401-11	CARBON	47	5%	1/4W	
R505	1-249-401-11	CARBON	47	5%	1/4W	
R506	1-249-401-11	CARBON	47	5%	1/4W	
R507	1-249-430-11	CARBON	12K	5%	1/4W	
R508	1-249-426-11	CARBON	5.6K	5%	1/4W	
R509	1-249-412-11	CARBON	390	5%	1/4W	
R510	1-249-441-11	CARBON	100K	5%	1/4W	
R511	1-249-411-11	CARBON	330	5%	1/4W	
R512	1-249-422-11	CARBON	2.7K	5%	1/4W	
R513	1-249-409-11	CARBON	220	5%	1/4W	
R514	1-249-409-11	CARBON	220	5%	1/4W	
R515	1-249-409-11	CARBON	220	5%	1/4W	
R516	1-249-413-11	CARBON	470	5%	1/4W	
R517	1-249-397-11	CARBON	22	5%	1/4W	
R518	1-249-397-11	CARBON	22	5%	1/4W	
R519	1-249-397-11	CARBON	22	5%	1/4W	
R520	1-249-421-11	CARBON	2.2K	5%	1/4W	
R521	1-247-706-11	CARBON	330	5%	1/4W	
R522	1-249-408-11	CARBON	180	5%	1/4W	
R523	1-247-903-00	CARBON	1M	5%	1/4W	
R524	1-247-749-11	CARBON	560	5%	1/2W	
R525	1-247-749-11	CARBON	560	5%	1/2W	
R526	1-247-749-11	CARBON	560	5%	1/2W	
R527	1-249-397-11	CARBON	22	5%	1/4W	
R528	1-247-716-11	CARBON	1.8K	5%	1/4W	
R529	1-249-441-11	CARBON	100K	5%	1/4W	
R530	1-249-401-11	CARBON	47	5%	1/4W	
R531	1-249-397-11	CARBON	22	5%	1/4W	
R532	1-247-716-11	CARBON	1.8K	5%	1/4W	
R533	1-247-885-00	CARBON	180K	5%	1/4W	
R534	1-249-401-11	CARBON	47	5%	1/4W	
R535	1-249-397-11	CARBON	22	5%	1/4W	
R536	1-247-716-11	CARBON	1.8K	5%	1/4W	
R537	1-249-417-11	CARBON	1K	5%	1/4W	
R538	1-249-399-11	CARBON	33	5%	1/4W	
R539	1-247-749-11	CARBON	560	5%	1/2W	
R540	1-249-417-11	CARBON	1K	5%	1/4W	
R541	1-249-439-11	CARBON	68K	5%	1/4W	
R542	1-249-435-11	CARBON	33K	5%	1/4W	
R543	1-249-417-11	CARBON	1K	5%	1/4W	
R544	1-249-441-11	CARBON	100K	5%	1/4W	
R545	1-249-428-11	CARBON	8.2K	5%	1/4W	
R546	1-249-416-11	CARBON	820	5%	1/4W	
R547	1-249-409-11	CARBON	220	5%	1/4W	
R548	1-249-417-11	CARBON	1K	5%	1/4W	
R549	1-249-426-11	CARBON	5.6K	5%	1/4W	
R550	1-249-421-11	CARBON	2.2K	5%	1/4W	
R552	1-249-421-11	CARBON	2.2K	5%	1/4W	
R553	1-249-421-11	CARBON	2.2K	5%	1/4W	
R554	1-247-749-11	CARBON	560	5%	1/2W	
R555	1-247-749-11	CARBON	560	5%	1/2W	
R556	1-247-749-11	CARBON	560	5%	1/2W	
R557	1-249-441-11	CARBON	100K	5%	1/4W	
R558	1-249-418-11	CARBON	1.2K	5%	1/4W	
R559	1-249-429-11	CARBON	10K	5%	1/4W	
R560	1-214-964-00	RES, HIGH MEG OHM 1M				
R561	1-214-964-00	RES, HIGH MEG OHM 1M				
R562	1-214-964-00	RES, HIGH MEG OHM 1M				
R563	1-247-887-00	CARBON	220K	5%	1/4W	
R564	1-247-887-00	CARBON	220K	5%	1/4W	
R565	1-247-887-00	CARBON	220K	5%	1/4W	
R566	1-247-883-00	CARBON	150K	5%	1/4W	
R567	1-247-893-11	CARBON	390K	5%	1/4W	
R568	1-247-883-00	CARBON	150K	5%	1/4W	
R569	1-247-893-11	CARBON	390K	5%	1/4W	
R570	1-247-883-00	CARBON	150K	5%	1/4W	
R571	1-247-893-11	CARBON	390K	5%	1/4W	
R572	1-247-700-11	SOLID	100	5%	1/4W	
R573	1-247-700-11	SOLID	100	5%	1/4W	
R574	1-247-700-11	SOLID	100	5%	1/4W	
R575	1-214-929-00	RES, HIGH MEG OHM 470K				
R576	1-214-956-00	RES, HIGH MEG OHM 470K				
R577	1-202-818-00	SOLID	1K	10%	1/2W	
R578	1-202-838-00	SOLID	100K	10%	1/2W	
R579	1-216-370-11	METAL OXIDE	1.2	5%	2W	F
R580	1-202-847-00	SOLID	560K	10%	1/2W	
R584	1-249-421-11	CARBON	2.2K	5%	1/4W	

<VARIABLE RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
RV501	1-228-994-00	RES, ADJ, METAL GLAZE 10K	
RV502	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	
RV503	1-237-499-21	RES, ADJ, CERMET 500	
RV504	1-237-499-21	RES, ADJ, CERMET 500	
RV505	1-237-507-21	RES, ADJ, CERMET 200K	
RV506	1-238-707-11	RES, ADJ, CERMET 200K	
RV507	1-238-689-11	VOLUME, ADJ, METAL GLAZE 2M	
RV508	1-238-689-11	VOLUME, ADJ, METAL GLAZE 2M	
RV509⚠	1-230-798-21	RES, ADJ, METAL GLAZE 90M	
RV510	1-237-507-21	RES, ADJ, CERMET 200K	
RV511	1-237-500-21	RES, ADJ, CERMET 1K	

<SOCKET>

REF.NO.	PART NO.	DESCRIPTION	REMARK
S501	1-526-762-00	SOCKET, PICTURE TUBE	

<SPARK GAP>

REF.NO.	PART NO.	DESCRIPTION	REMARK
SG501	1-519-421-11	GAP, DISCHARGE	
SG502	1-519-421-11	GAP, DISCHARGE	
SG503	1-519-421-11	GAP, DISCHARGE	
SG504	1-519-030-00	DISCHARGE ELEMENT	

****

REF.NO.	PART NO.	DESCRIPTION	REMARK
	*A-1345-995-A	D BOARD, COMPLETE ***************** (DA BOARD INCLUDING)	
	⚠1-526-954-11	INLET, AC ; PI	
	*4-030-202-01	HOLDER (TR)	
	*4-030-211-01	HOLDER (TR)	
	*4-030-212-01	HOLDER (TR)	
	*4-314-225-00	HEAT SINK, (A) (FN401)	
	*4-380-083-01	HOLDER (E), LED ; Z021	
	4-392-771-01	CAP, SEAL	

<CAPACITOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
C201	1-126-104-11	ELECT	470MF	20%	35V	
C202	1-136-169-00	FILM	0.22MF	5%	50V	
C203	1-108-816-11	MYLAR	0.1MF	5%	50V	
C204	1-124-484-11	ELECT	220MF	20%	35V	
C205	1-124-903-11	ELECT	1MF	20%	50V	
C206	1-136-165-00	FILM	0.1MF	5%	50V	
C207	1-136-165-00	FILM	0.1MF	5%	50V	

D

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION			REMARK
C208	1-130-489-00	MYLAR	0.033MF	5%	50V
C209	1-130-781-00	FILM	0.22MF	10%	100V
C210	1-124-557-11	ELECT	1000MF	20%	25V
C211	1-124-478-11	ELECT	100MF	20%	25V
C212	1-126-104-11	ELECT	470MF	20%	35V
C213	1-123-875-11	ELECT	10MF	20%	50V
C214	1-108-792-11	MYLAR	0.001MF	5%	50V
C216	1-124-557-11	ELECT	1000MF	20%	25V
C217	1-124-479-11	ELECT	330MF	20%	25V
C401	1-126-103-11	ELECT	470MF	20%	16V
C402	1-124-666-11	ELECT	4.7MF	20%	200V
C403	1-136-209-11	FILM	0.1MF	10%	250V
C404	1-126-527-11	ELECT	47MF	20%	200V
C405	1-124-667-11	ELECT	10MF	20%	100V
C406	1-108-626-11	MYLAR	0.01MF	10%	100V
C407	1-108-680-11	MYLAR	0.001MF	10%	100V
C408	⚠ 1-104-492-11	FILM	5600PF	3%	2KV
C409	**1-104-489-11**	**FILM**	**820PF**	**3%**	**1. 6KV**
C410	1-136-079-00	FILM	0.01MF	3%	2KV
C412	**1-104-495-11**	**FILM**	**3. 9MF**	**3%**	**100V**
C413	1-124-667-11	ELECT	10MF	20%	100V
C414	1-136-540-11	FILM	0.82MF	5%	200V
C415	**1-104-496-11**	**FILM**	**3. 3MF**	**3%**	**200V**
C416	1-162-870-11	CERAMIC	0.0022MF	10%	1KV
C417	1-130-483-00	MYLAR	0.01MF	5%	50V
C418	1-162-978-11	CERAMIC	0.01MF		2KV
C419	1-162-978-11	CERAMIC	0.01MF		2KV
C420	1-108-816-11	MYLAR	0.1MF	5%	50V
C421	1-126-326-51	ELECT	10MF	20%	250V
C422	**1-104-497-11**	**FILM**	**0. 47MF**	**3%**	**200V**
C423	1-164-350-11	CERAMIC	470PF	10%	1KV
C424	1-136-177-00	METALIZED	1MF	5%	50V
C425	1-124-478-11	ELECT	100MF	20%	25V
C427	1-123-875-11	ELECT	10MF	20%	50V
C429	1-124-929-11	ELECT	22MF	20%	100V
C430	1-124-927-11	ELECT	4.7MF	20%	50V
C431	1-124-929-11	ELECT	22MF	20%	100V
C440	1-124-910-11	ELECT	47MF	20%	35V
C901	⚠ 1-161-742-11	CERAMIC	0.0022MF	20%	400V
C902	⚠ 1-161-742-11	CERAMIC	0.0022MF	20%	400V
C903	⚠ 1-136-527-12	FILM	0.47MF	20%	250V
C904	⚠ 1-136-527-12	FILM	0.47MF	20%	250V
C905	1-125-541-11	ELECT(BLOCK)	470MF	20%	400V
C906	1-136-206-11	FILM	0.033MF	10%	600V
C907	1-162-131-11	CERAMIC	220PF	10%	2KV
C909	1-108-808-11	MYLAR	0.022MF	10%	50V
C910	1-124-919-11	ELECT	220MF	20%	63V
C911	1-124-915-11	ELECT	10MF	20%	63V
C913	1-161-742-00	CERAMIC	0.0022MF	20%	400V
C914	1-161-742-00	CERAMIC	0.0022MF	20%	400V
C915	1-161-742-00	CERAMIC	0.0022MF	20%	400V
C916	1-161-742-00	CERAMIC	0.0022MF	20%	400V
C921	1-162-558-11	CERAMIC	100PF	10%	2KV
C922	1-104-500-11	ELECT	220MF		250V
C923	1-104-499-11	ELECT	100MF		250V
C924	1-108-816-11	MYLAR	0.1MF	5%	50V
C925	1-123-605-00	ELECT	100MF	20%	100V
C926	1-124-485-11	ELECT	330MF	20%	35V
C927	1-124-480-11	ELECT	470MF	20%	25V
C928	1-161-772-11	CERAMIC	0.1MF	10%	25V
C929	1-124-479-11	ELECT	330MF	20%	25V
C930	1-124-485-11	ELECT	330MF	20%	35V
C931	1-126-220-51	ELECT	680MF	20%	16V
C932	1-124-931-11	ELECT	47MF	20%	100V
C933	1-124-929-11	ELECT	22MF	20%	100V
C934	1-124-122-11	ELECT	100MF	20%	35V
C935	1-124-119-00	ELECT	330MF	20%	16V

<DIODE>

REF.NO.	PART NO.	DESCRIPTION
D201	8-719-820-59	DIODE 1S1588
D202	8-719-820-56	DIODE S5688B
D203	8-719-110-41	DIODE RD15ES-B2
D204	8-719-110-41	DIODE RD15ES-B2
D205	8-719-941-64	DIODE GL5EG8
D401	8-719-110-13	DIODE RD9.1ES-B2
D402	8-719-301-86	DIODE RG2
D403	8-719-981-00	DIODE ERC81-004
D404	8-719-991-68	DIODE ESC011M-15
D405	8-719-820-56	DIODE S5688B
D406	8-719-312-26	DIODE EG01
D407	8-719-312-11	DIODE RP1H
D412	8-719-311-16	DIODE EG01Y
D413	8-719-301-86	DIODE RG2
D414	8-719-110-41	DIODE RD15ESB2
D415	8-719-311-16	DIODE EG01Y
D416	8-719-301-64	DIODE RU4DS
D417	8-719-110-41	DIODE RD15ES-B2
D418	8-719-110-31	DIODE RD12ESB2
D420	8-719-110-31	DIODE RD12ESB2
D901	8-719-500-16	DIODE D5SB60
D902	**8-719-311-17**	**DIODE EG01C**
D903	**8-719-302-04**	**DIODE EU02Z**
D904	**8-719-302-04**	**DIODE EU02Z**
D905	8-719-160-68	DIODE RD18FB2
D921	8-719-301-64	DIODE RU4DS
D922	8-719-302-06	DIODE EU2A
D923	**8-719-302-04**	**DIODE EU02Z**
D924	8-719-023-68	DIODE 5DL2CZ41A
D925	8-719-312-27	DIODE EU2YX
D926	8-719-023-68	DIODE 5DL2CZ41A
D927	8-719-023-66	DIODE RD68EB
D928	8-719-023-66	DIODE RD68EB
D929	8-719-023-66	DIODE RD68EB
D930	8-719-820-56	DIODE S5688B
D931	8-719-820-59	DIODE 1S1588
D932	8-719-820-59	DIODE 1S1588

<FUSE>

REF.NO.	PART NO.	DESCRIPTION
F901	**⚠.1-532-747-11**	**FUZE, TIME-LAG (5A/125V)**
	***1-533-087-00**	**HOLDER, FUZE; FH901**

<IC>

REF.NO.	PART NO.	DESCRIPTION
IC201	8-759-049-07	IC TDA1675A
IC401	8-749-923-31	HIC CHO-2
IC901	8-749-923-21	IC STR-S5741
IC902	8-759-088-08	IC UPC7812AHF

<RELAY>

REF.NO.	PART NO.	DESCRIPTION
K401	1-515-753-11	RELAY
K901	1-515-753-11	RELAY

<COIL>

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
L201	1-408-080-00	INDUCTOR 100UH	
L401	1-459-996-11	COIL, CHOKE 2.0MMH	
L402	1-460-001-11	COIL, CHOKE 2200UH	
L403	1-402-719-11	COIL, PIN MODULATION	
L404	1-407-498-00	INDUCTOR 3.3MMH	
L405	1-459-997-11	COIL, HORIZONTAL LINEARITY	
L406	1-421-329-00	COIL, CHOKE	
L407	1-459-111-00	COIL, DRAM, CORE 10UH	
L408	1-408-080-00	INDUCTOR 100UH	
L409	1-410-396-41	INDUCTOR 0.45UH	
L901	1-423-333-11	TRANSFORMER, LINE FILTER	
L902	1-459-999-11	COIL, CHOKE 18UH	
L903	1-408-119-00	INDUCTOR 15UH	
L904	1-408-119-00	INDUCTOR 15UH	
L905	1-459-998-11	COIL, CHOKE 150UH	
L908	1-410-396-41	INDUCTOR 0.45UH	
L909	1-410-396-41	INDUCTOR 0.45UH	
L912	1-410-396-41	INDUCTOR 0.45UH	

<CONNECTOR>

P201	1-506-348-XX	PIN, CONNECTOR 3P	
P202	*1-560-895-00	PIN, CONNECTOR 7P	
P301	*1-566-226-11	PIN, CONNECTOR 20P	
P302	*1-566-226-11	PIN, CONNECTOR 20P	
P401	1-506-348-XX	PIN, CONNECOTR 5P	
P402	*1-560-893-00	PIN, CONNECTOR 5P	
P902	*1-560-898-00	PIN, CONNECTOR 10P	
P903	*1-560-896-00	PIN, CONNECTOR 8P	
P904	*1-560-896-00	PIN, CONNECTOR 8P	
P905	*1-560-891-00	PIN, CONNECTOR 3P	

<TRANSISTOR>

Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q202	8-729-111-54	TRANSISTOR 2SD1312-L	
Q203	8-729-111-52	TRANSISTOR 2SB984-K	
Q204	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q205	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q401	8-729-927-10	TRANSISTOR IRF9630	
Q402	8-729-012-56	TRANSISTOR IRF710	
Q403	8-729-821-95	TRANSISTOR 2SC3897	
Q404	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q411	8-729-119-00	TRANSISTOR 2SK612	
Q412	8-729-012-62	TRANSISTOR 2SA1507	
Q901	8-719-108-18	THYRISTOR 5P6M	
Q902	8-729-119-78	TRANSISTOR 2SC2785-HFE	

<RESISTOR>

R201	1-247-722-11	CARBON	5.6K	5%	1/4W	
R202	1-249-459-11	CARBON	12K	5%	1/4W	
R203	1-247-725-11	CARBON	10K	5%	1/4W	
R204	1-247-721-11	CARBON	4.7K	5%	1/4W	
R205	1-249-463-11	CARBON	27K	5%	1/4W	
R206	1-247-895-00	CARBON	470K	5%	1/4W	
R207	1-247-725-11	CARBON	10K	5%	1/4W	
R208	1-247-721-11	CARBON	4.7K	5%	1/4W	
R209	1-249-462-11	CARBON	22K	5%	1/4W	
R210	1-247-891-00	CARBON	330K	5%	1/4W	
R211	1-215-865-11	METAL OXIDE	220	5%	1W	F
R212	1-249-453-11	CARBON	3.3	5%	1/4W	F
R213	1-247-716-11	CARBON	1.8K	5%	1/4W	
R214	1-247-701-11	CARBON	120	5%	1/4W	
R215	1-247-715-11	CARBON	1.5K	5%	1/4W	
R216	1-216-349-00	METAL OXIDE	1	5%	1W	F
R217	1-215-885-00	METAL OXIDE	68	5%	2W	F
R218	1-212-865-00	FUSIBLE	22	5%	1/4W	F
R219	1-247-725-11	CARBON	10K	5%	1/4W	
R220	1-247-749-11	CARBON	560	5%	1/2W	
R221	1-247-725-11	CARBON	10K	5%	1/4W	
R222	1-247-725-11	CARBON	10K	5%	1/4W	
R223	1-247-725-11	CARBON	10K	5%	1/4W	
R224	1-247-725-11	CARBON	10K	5%	1/4W	
R225	1-247-701-11	CARBON	120	5%	1/4W	
R226	1-246-543-00	CARBON	820K	5%	1/4W	
R227	1-247-887-00	CARBON	220K	5%	1/4W	
R401	1-247-721-11	CARBON	4.7K	5%	1/4W	
R402	1-249-465-11	CARBON	47K	5%	1/4W	
R404	1-213-086-00	FUSIBLE	120	5%	1W	F
R405	1-247-713-11	CARBON	1K	5%	1/4W	
R406	1-215-896-00	METAL OXIDE	4.7K	5%	2W	F
R407	1-216-390-11	METAL OXIDE	1.2	5%	3W	F
R408	1-215-880-00	METAL OXIDE	10	5%	2W	F
R409	1-216-393-00	METAL OXIDE	2.2	5%	3W	F
R410	1-260-082-91	CARBON	39	5%	1/2W	
R411	1-212-994-00	FUSIBLE	330	5%	1/2W	F
R412	1-247-725-11	CARBON	10K	5%	1/4W	
R413	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R414	⚠ 1-214-746-11	METAL FILM	5.6K	1%	1/4W	
R415	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R416	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R417	1-260-119-11	CARBON	47K	5%	1/2W	
R418	1-260-119-11	CARBON	47K	5%	1/2W	
R419	1-260-120-11	CARBON	56K	5%	1/2W	
R420	1-260-120-11	CARBON	56K	5%	1/2W	
R421	1-212-865-00	FUSIBLE	22	5%	1/4W	F
R422	1-249-466-11	CARBON	56K	5%	1/4W	
R423	1-212-877-11	FUSIBLE	68	5%	1/4W	F
R434	1-247-883-00	CARBON	150K	5%	1/4W	
R435	1-247-885-00	CARBON	180K	5%	1/4W	
R436	1-249-469-11	CARBON	100K	5%	1/4W	
R437	1-216-480-11	METAL OXIDE	820	5%	3W	F
R438	1-249-462-11	CARBON	22K	5%	1/4W	
R439	1-214-921-55	METAL	220K		1/2W	
R440	1-247-704-11	CARBON	220	5%	1/4W	
R901	1-214-931-00	METAL GLAZE	560K	5%	1/2W	
R902	1-205-779-11	WIREWOUND	1	5%	10W	F
R903	1-260-126-91	CARBON	180K	5%	1/2W	
R904	1-260-127-91	CARBON	220K	5%	1/2W	
R905	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R906	1-215-926-00	METAL OXIDE	33K	5%	3W	F
R908	1-215-907-11	METAL OXIDE	22	5%	3W	F
R909	1-216-469-11	METAL OXIDE	12	5%	3W	F
R910	1-215-906-11	METAL OXIDE	15	5%	3W	F
R911	1-212-865-00	FUSIBLE	22	5%	1/4W	F
R913	1-205-956-11	WIREWOUND	0.15	10%	3W	
R915	1-214-769-00	METAL	47K	1%	1/4W	
R916	1-214-777-00	METAL	100K	1%	1/4W	
R920	1-217-501-00	FUSIBLE	470	5%	1W	F
R921	1-217-501-00	FUSIBLE	470	5%	1W	F
R922	1-205-616-00	WIREWOUND	1	5%	5W	F
R923	1-247-713-11	CARBON	1K	5%	1/4W	
R924	1-260-127-91	CARBON	220K	5%	1/2W	
R926	1-217-637-00	FUSIBLE	1	5%	1/4W	F
R927	1-249-467-11	CARBON	68K	5%	1/4W	
R928	1-212-934-00	FUSIBLE	1	5%	1/2W	F
R929	1-207-451-00	RES, WIRE	0.1		1/6W	

The components identified by ⧓ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

DA(DC-1)

REF.NO.	PART NO.	DESCRIPTION				REMARK
R930	1-212-934-00	FUSIBLE	1	5%	1/2W	F
R931	1-207-451-00	RES, WIRE	0.1		1/6W	
R932	1-216-371-00	METAL OXIDE	1.5	5%	2W	F
R934	1-247-698-11	CARBON	68	5%	1/4W	
R935	1-247-726-11	CARBON	33K	5%	1/4W	
R936	1-249-465-11	CARBON	47K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV201	1-228-997-00	RES, ADJ, CERMET 100K				
RV204	1-238-449-21	RES, VAR, CARBON 10K				
RV205	1-241-715-21	RES, VER, CARBON 10K				
RV401	1-238-688-11	RES, VAR, WIREWOUND 100				
⧓RV402	⚠1-223-213-11	RES, ADJ, CERMET				
		<VOLUME>				
RVB1	1-238-721-11	VOLUME (4 GANG) 5K/10K/5K/10K				
		<SWITCH>				
SW401	1-571-427-11	SWITCH, SLIDE				
SW402	1-572-022-11	SWITCH, SLIDE				
SW901	⚠1-571-433-11	SWITCH, PUSH (AC POWER)				
		<TRANSFORMER>				
T401	1-423-345-11	TRANSFORMER, HORIZONTAL DRIVE				
T402	⚠1-453-130-11	TRANSFORMER ASS'Y FLYBACK				
T901	⚠1-423-346-11	TRANSFORMER				
		<THERMISTOR>				
TH201	1-807-796-11	THERMISTOR				
TH402	1-809-880-11	POSISTOR				
TH901	1-808-059-31	THERMISTOR, POSITIVE				
		<CONNECTOR>				
Z201	4-380-083-01	HOLDER(E), LED				
Z404	4-392-771-01	CAP, SEAL				
Z903	1-543-966-11	CORE, EMI				

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	*A-1346-088-A	DA BOARD, COMPLETE ******************				
		<CAPACITOR>				
C101	1-126-399-11	ELECT CHIP	10MF	20%		35V
C102	1-124-767-00	ELECT	2.2MF	20%		50V
C103	1-126-399-11	ELECT CHIP	10MF	20%		35V
C104	1-124-767-00	ELECT	2.2MF	20%		50V
C105	1-126-101-11	ELECT	100MF	20%		16V
C106	1-126-101-11	ELECT	100MF	20%		16V
C108	1-126-399-11	ELECT CHIP	10MF	20%		35V
C109	1-126-101-11	ELECT	100MF	20%		16V
C110	1-126-399-11	ELECT CHIP	10MF	20%		35V
C111	1-126-398-11	ELECT CHIP	4.7MF	20%		35V
C112	1-126-398-11	ELECT CHIP	4.7MF	20%		35V
C113	1-126-399-11	ELECT CHIP	10MF	20%		35V
C114	1-163-193-00	CERAMIC CHIP	330PF	5%		50V
C251	1-163-038-00	CERAMIC CHIP	0.1MF			25V
C252	1-163-038-00	CERAMIC CHIP	0.1MF			25V
C253	1-126-101-11	ELECT	100MF	20%		16V

REF.NO.	PART NO.	DESCRIPTION			REMARK
C301	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C302	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C303	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C304	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C305	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C306	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C307	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C308	1-163-209-00	CERAMIC CHIP	0.0015MF	5%	50V
C309	1-126-399-11	ELECT CHIP	10MF	20%	35V
C310	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C311	1-126-301-11	ELECT	1MF	20%	50V
C312	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C313	1-126-401-11	ELECT CHIP	1MF	20%	50V
C314	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C315	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C316	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C317	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C318	1-126-396-11	ELECT CHIP	47MF	20%	16V
C319	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C320	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C321	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C322	1-126-103-11	ELECT	470MF	20%	16V
C326	1-163-209-00	CERAMIC CHIP	0.0015MF	5%	50V
C327	1-164-222-11	CERAMIC CHIP	0.22MF		25V
C328	1-123-875-11	ELECT	10MF	20%	35V
C329	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C330	1-126-399-11	ELECT CHIP	10MF	20%	35V
C331	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C332	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C334	1-126-398-11	ELECT CHIP	4.7MF	20%	35V
C336	1-126-399-11	ELECT CHIP	10MF	20%	35V
C337	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C338	1-124-277-11	ELECT	4.7MF	20%	35V
C340	1-163-011-11	CERAMIC CHIP	0.0015MF	10%	50V
C341	1-124-910-11	ELECT	47MF	20%	35V
C342	1-126-101-11	ELECT	100MF	20%	16V
C345	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C346	1-126-399-11	ELECT CHIP	10MF	20%	35V
C347	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C349	1-126-399-11	ELECT CHIP	10MF	20%	35V
C350	1-163-193-00	CERAMIC CHIP	330PF	5%	50V
C601	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C602	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C603	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C604	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C605	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C606	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C607	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C608	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C609	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C610	1-163-205-00	CERAMIC CHIP	0.001MF	5%	50V
C611	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C612	1-163-021-91	CERAMIC CHIP	0.01MF	5%	50V
C613	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C614	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C622	1-163-038-00	CERAMIC CHIP	0.1MF		25V
		<DIODE>			
D103	8-719-105-91	DIODE RD5.6M-B2			
D104	8-719-105-91	DIODE RD5.6M-B2			
D253	8-719-820-05	DIODE 1SS181			
D254	8-719-801-48	DIODE 1SS193			
D255	8-719-801-78	DIODE 1SS184			

REF.NO.	PART NO.	DESCRIPTION	REMARK
D257	8-719-820-05	DIODE 1SS181	
D259	8-719-801-48	DIODE 1SS193	
D301	8-719-801-48	DIODE 1SS193	
D302	8-719-801-48	DIODE 1SS193	
D303	8-719-106-44	DIODE RD9.1M-B2	
D304	8-719-820-05	DIODE 1SS181	
D306	8-719-801-48	DIODE 1SS193	
D308	8-719-801-48	DIODE 1SS193	
D309	8-719-801-48	DIODE 1SS193	
D310	8-719-801-48	DIODE 1SS193	
D311	8-719-107-15	DIODE RD18M-B2	
D312	8-719-801-48	DIODE 1SS193	
D601	8-719-820-05	DIODE 1SS181	
D602	8-719-801-48	DIODE 1SS193	
D603	8-719-800-76	DIODE 1SS226	
D604	8-719-105-82	DIODE RD5.1ES-B2	
D605	8-719-800-76	DIODE 1SS226	
D606	8-719-800-76	DIODE 1SS226	
D607	8-719-801-78	DIODE 1SS184	
D608	8-719-801-48	DIODE 1SS193	
D609	8-719-820-05	DIODE 1SS181	
D610	8-719-801-48	DIODE 1SS193	
D611	8-719-801-48	DIODE 1SS193	
D612	8-719-026-17	DIODE RD5.1PB	

<IC>

REF.NO.	PART NO.	DESCRIPTION	REMARK
IC101	8-749-923-30	IC PR-1	
IC250	8-759-064-06	IC UPA2004GR	
IC301	8-759-822-53	IC LA7850	
IC302	8-759-064-06	IC UPA2004GR	
IC303	8-759-942-16	IC TEA2031A	
IC304	8-759-064-03	IC AN1431M	
IC601	8-759-032-01	IC MC74HC00AF	
IC602	8-759-239-23	IC TC74HC86AF	
IC603	8-759-032-01	IC MC74HC00AF	
IC604	8-759-926-12	IC SN74HC139ANS	
IC605	8-759-239-55	IC TC74HC123AF	
IC606	8-759-032-01	IC MC74HC00AF	

<COIL>

REF.NO.	PART NO.	DESCRIPTION		REMARK
L101	1-408-080-00	INDUCTOR	100UH	
L102	1-412-390-21	INDUCTOR		
L103	1-412-390-21	INDUCTOR		
L250	1-408-080-00	INDUCTOR	100UH	
L301	1-408-080-00	INDUCTOR	100UH	
L302	1-408-080-00	INDUCTOR	100UH	

<CONNECTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
P301	*1-563-226-11	CONNECTOR, INTERNATIONAL	
P302	*1-563-226-11	CONNECTOR, INTERNATIONAL	
P303	*1-560-892-00	PIN, CONNECTOR 4P	
P304	*1-560-894-00	PIN, CONNECTOR 6P	
TP301	*1-560-891-00	PIN, CONNECTOR 3P	

<TRANSISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
Q101	8-729-216-22	TRANSISTOR 2SA1162-G	
Q102	8-729-216-22	TRANSISTOR 2SA1162-G	
Q253	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q254	8-729-216-22	TRANSISTOR 2SA1162-G	
Q255	8-729-216-22	TRANSISTOR 2SA1162-G	
Q301	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q302	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q303	8-729-216-22	TRANSISTOR 2SA1162-G	
Q304	8-729-216-22	TRANSISTOR 2SA1162-G	
Q305	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q306	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q307	8-729-216-22	TRANSISTOR 2SA1162-G	
Q308	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q309	8-729-216-22	TRANSISTOR 2SA1162-G	
Q310	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q311	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q312	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q313	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q314	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q315	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q316	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q317	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q318	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q319	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q320	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q321	8-729-216-22	TRANSISTOR 2SA1162-G	
Q601	8-729-112-65	TRANSISTOR 2SA1462-Y33	
Q602	8-729-112-65	TRANSISTOR 2SA1462-Y33	
Q603	8-729-216-22	TRANSISTOR 2SA1162-G	
Q604	8-729-216-22	TRANSISTOR 2SA1162-G	
Q605	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q606	8-729-421-22	TRANSISTOR UN2211	
Q607	8-729-216-22	TRANSISTOR 2SA1162-G	
Q608	8-729-421-22	TRANSISTOR UN2211	
Q609	8-729-421-22	TRANSISTOR UN2211	
Q610	8-729-421-22	TRANSISTOR UN2211	
Q611	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q612	8-729-421-22	TRANSISTOR UN2211	
Q613	8-729-421-22	TRANSISTOR UN2211	
Q614	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q615	8-729-421-22	TRANSISTOR UN2211	
Q616	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q617	8-729-216-22	TRANSISTOR 2SA1162-G	
Q618	8-729-216-22	TRANSISTOR 2SA1162-G	

<RESISTOR>

REF.NO.	PART NO.	DESCRIPTION				REMARK
R101	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R102	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R103	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R104	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R105	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R106	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R107	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R108	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R109	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R110	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R111	1-216-196-00	CHIP	820	5%	1/8W	
R112	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R113	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R114	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R115	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R116	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R117	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R118	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	
R119	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R120	1-216-196-00	CHIP	820	5%	1/8W	
R121	1-216-196-00	CHIP	820	5%	1/8W	
R122	1-216-196-00	CHIP	820	5%	1/8W	

DA(DC-1)

REF.NO.	PART NO.	DESCRIPTION				REMARK
R255	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R256	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R257	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R258	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R259	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R260	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R261	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R262	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R263	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R264	1-216-295-00	CHIP	0	5%	1/10W	
R265	1-216-295-00	CHIP	0	5%	1/10W	
R266	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R267	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R268	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R269	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R301	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R302	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R303	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R304	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R305	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R306	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R307	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R308	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R309	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R310	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R311	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R312	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R313	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R314	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R315	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R316	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R317	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R318	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R319	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R320	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R321	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R322	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R323	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R324	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R325	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R326	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R327	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R328	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R329	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R330	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R331	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R332	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R333	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R334	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R335	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R336	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R337	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R338	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R339	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R340	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R341	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R342	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R344	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R345	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R346	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R347	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R348	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R349	1-216-689-11	METAL FILM CHIP	39K	5%	1/10W	
R350	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R351	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R352	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R353	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R354	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R355	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R356	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R357	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R358	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R359	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R360	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R361	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R362	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R363	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R364	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R365	1-216-689-11	METAL FILM CHIP	39K	5%	1/10W	
R366	1-216-689-11	METAL FILM CHIP	39K	5%	1/10W	
R367	1-216-080-00	METAL GLAZE	20K	5%	1/10W	
R368	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R369	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R370	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R371	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R372	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R375	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R376	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R379	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R380	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R381	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R382	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R383	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R384	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R385	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R386	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R387	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R388	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R389	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R391	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R392	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R393	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R394	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R395	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R396	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R397	1-216-295-00	CHIP	0	5%	1/10W	
R399	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R601	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R602	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R603	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R604	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R605	1-216-196-00	METAL GLAZE	820	5%	1/8W	
R606	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R607	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R608	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R609	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R610	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R611	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R612	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R613	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R614	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R615	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R616	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R617	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R618	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R619	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R620	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
R621	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W	
R622	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R623	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R624	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R625	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R626	1-216-124-11	METAL GLAZE 1.3M 5% 1/10W	
R627	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R628	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R629	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R630	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R631	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R632	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R633	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R634	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R635	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R636	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R637	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
R638	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R639	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R640	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R641	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R642	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R644	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R645	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R646	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R647	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R648	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R649	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R650	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R651	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R652	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R653	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R654	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R655	1-216-015-00	METAL GLAZE 39 5% 1/10W	
R656	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R657	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R658	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R659	1-216-025-00	METAL GLAZE 100 5% 1/10W	

<VARIABLE RESISTOR>

REF.NO.	PART NO.	DESCRIPTION	REMARK
RV251	1-228-993-00	RES, ADJ, CERMET 5K	
RV252	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	
RV253	1-228-995-00	RES, ADJ, CARBON 22K	
RV254	1-228-994-00	RES, ADJ, CERMET 10K	
RV255	1-228-993-00	RES, ADJ, CERMET 5K	
RV256	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
RV257	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
RV301	1-238-693-11	RES, ADJ, CARBON 5K	
RV302	1-237-524-21	RES, ADJ, CARBON 1M	
RV303	1-228-994-00	RES, ADJ, CERMET 10K	
RV304	1-228-994-00	RES, ADJ, CERMET 10K	
RV305	1-228-993-00	RES, ADJ, CERMET 5K	
RV306	1-228-993-00	RES, ADJ, CERMET 5K	
RV307	1-228-997-00	RES, ADJ, METAL GRAZE 100K	
RV308	1-228-996-00	RES, ADJ, CERMET 50K	
RV309	1-238-688-11	RES, VAR, WIREWOUND 100	
RV310	1-228-997-00	RES, ADJ, CERMET 100K	
RV311	1-228-996-00	RES, ADJ, CERMET 50K	
RV312	1-228-996-00	RES, ADJ, CERMET 50K	
RV313	1-228-998-00	RES, ADJ, METAL GLAZE 220K	
RV314	1-230-868-11	RES, ADJ, METAL GLAZE 2.2K	
RV601	1-230-871-11	RES, ADJ, METAL GRAZE 22K	
RV602	1-237-964-11	RES, ADJ, METAL GRAZE 4.7K	

* * *

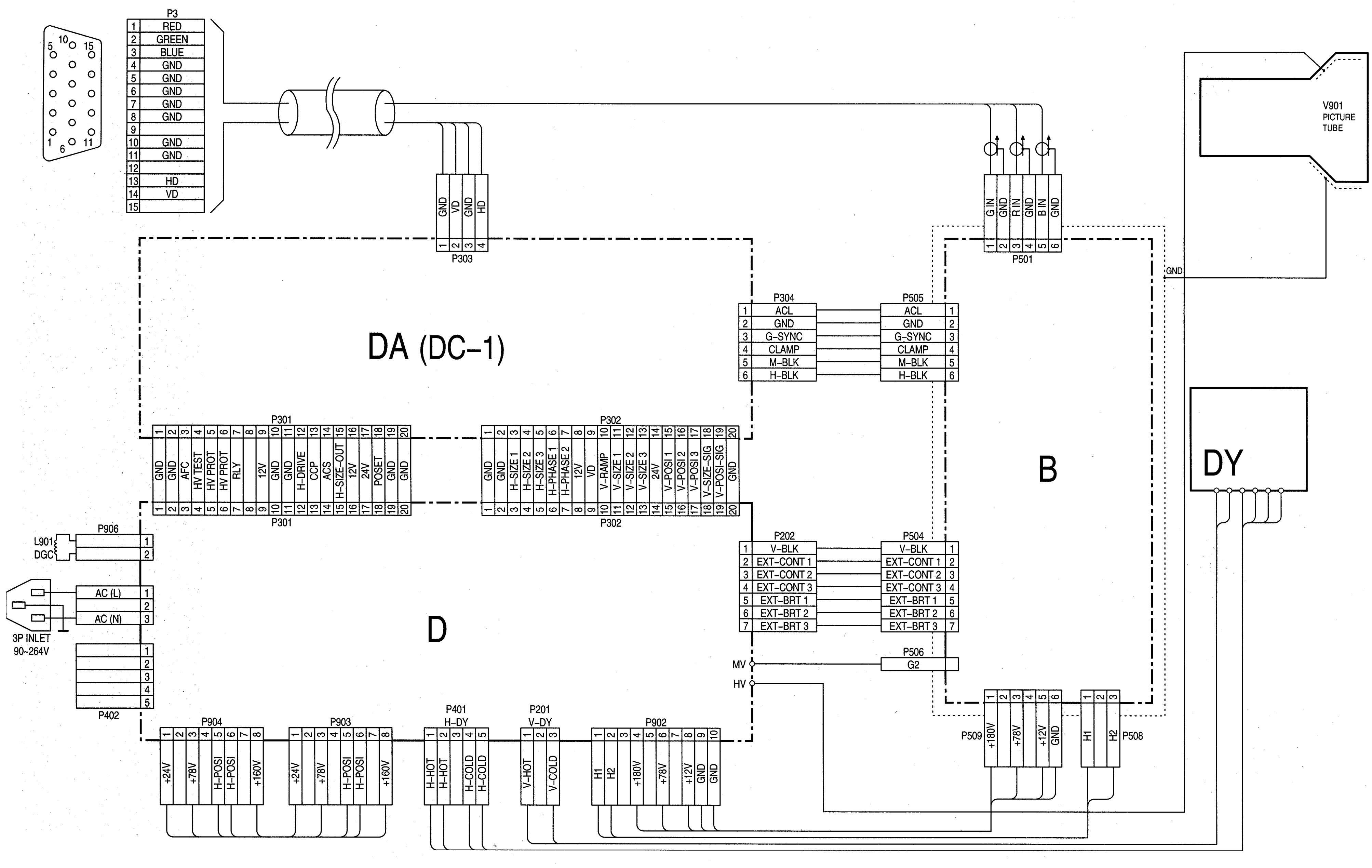
MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION	REMARK
	⚠.1-402-744-11	COIL, DEGAUSSING	
	⚠.1-451-409-11	DEFLECTION YOKE (TCD-13301)	
	1-452-032-00	MAGNET, DISK; 10MMϕ	
	1-941-843-17	CABLE ASSY, SIGNAL	
V901	⚠.8-738-260-05	PICTURE TUBE 14FGE (M34JNQ15X)	

* * *

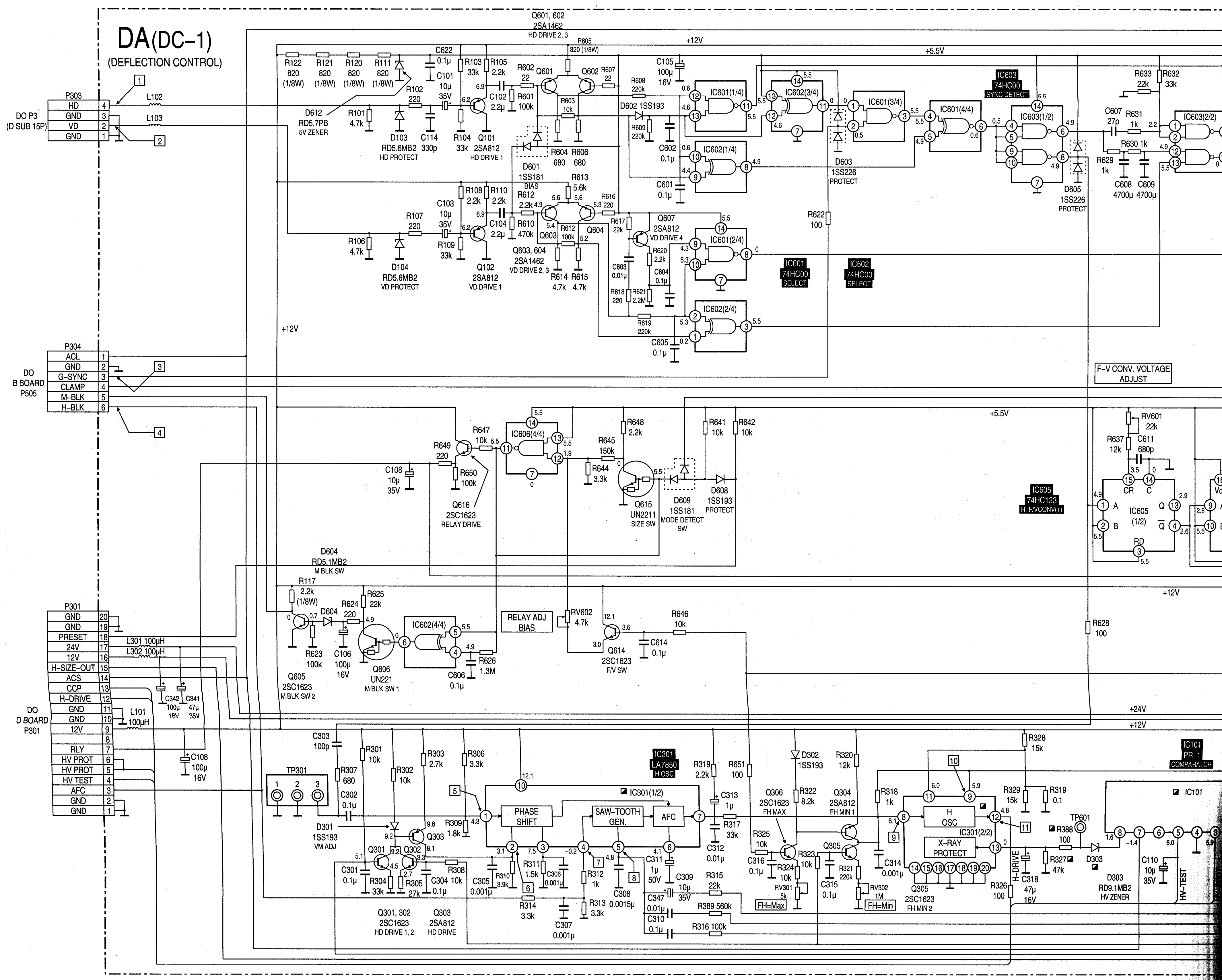
ACCESSORIES & PACKING MATERIALS

PART NO.	DESCRIPTION	REMARK
⚠.1-534-827-14	CORD, POWER (10A/125V)	
3-754-717-21	MANUAL, INSTRUCTION	
*4-035-216-01	CARTON, INDIVIDUAL	
*4-369-325-11	BAG, PROTECTION	
*4-392-724-01	SPACER	
*4-392-725-01	CUSHION (UPPER) (ASSY)	
*4-392-726-01	CUSHION (LOWER) (ASSY)	

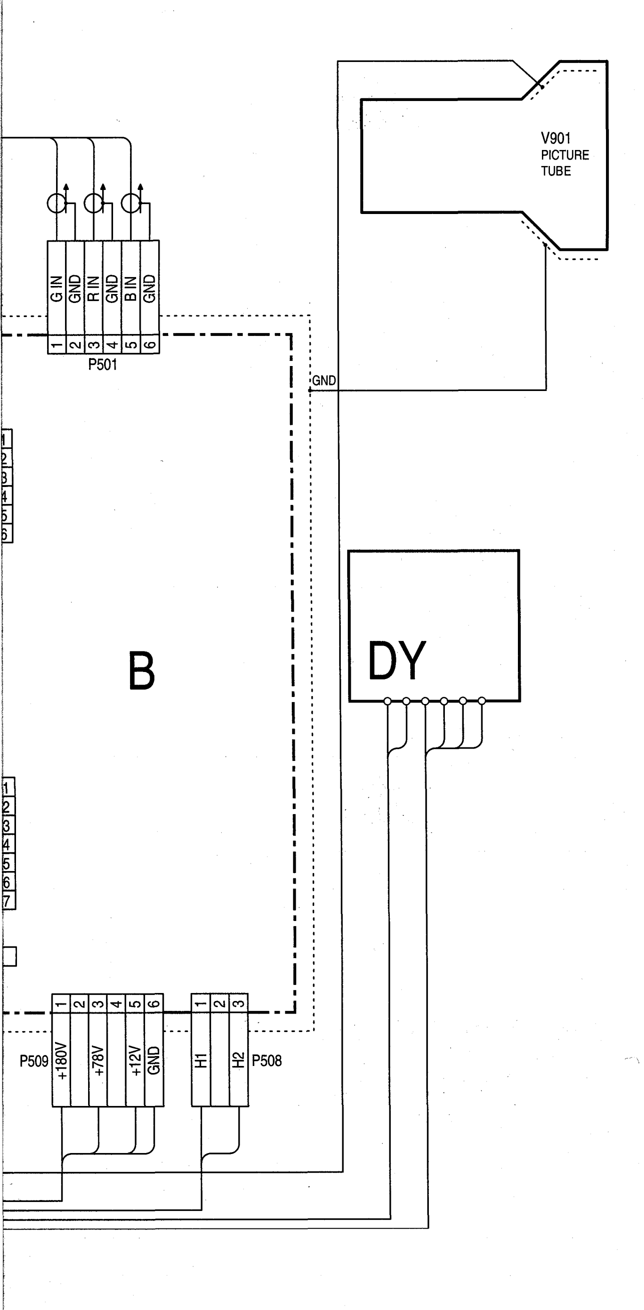


P3
RED
GREEN
BLUE
GND
HD
VD
P303
GND
VD
GND
HD
V901 PICTURE TUBE
G IN
R IN
B IN
P501
GND
DA (DC-1)
P304
ACL
G-SYNC
CLAMP
M-BLK
H-BLK
P505
P301
P302
AFC
HV TEST
HV PROT
RLY
12V
H-DRIVE
CCP
ACS
H-SIZE-OUT
24V
POSET
H-SIZE 1
H-SIZE 2
H-SIZE 3
H-PHASE 1
H-PHASE 2
V-RAMP
V-SIZE 1
V-SIZE 2
V-SIZE 3
V-POSI 1
V-POSI 2
V-SIZE-SIG
V-POSI-SIG
B
DY
L901 DGC
P906
AC (L)
AC (N)
3P INLET 90~264V
D
P202
V-BLK
EXT-CONT 1
EXT-CONT 2
EXT-CONT 3
EXT-BRT 1
EXT-BRT 2
EXT-BRT 3
P504
P506
G2
MV
HV
P402
P904
P903
P401 H-DY
P201 V-DY
P902
+24V
+78V
H-POSI
+160V
H-HOT
H-COLD
V-HOT
V-COLD
H1
H2
+180V
+12V
P509
P508

TYP
Układy sc
AN1431M
CXA1209P
LA7850
TDA1670A
TEA2031A
μPA2004GR
μPA81C
μPC7812HF
Tranzysto
2SA1091-0
2SA1162-G
2SA1175-HF
2SA1462-Y3
2SA1507
2SB984-K
2SC1623-L5
2SC2785-HF
2SC3897
2SD1312-L
2SK612
IRF710
IRF9630
UN2211



DA(DC-1)
(DEFLECTION CONTROL)
DO P3 (D SUB 15P)
P303
HD
GND
VD
L102
L103
Q601, 602 2SA1462 HD DRIVE 2, 3
+12V
+5.5V
D612 RD5.7PB 5V ZENER
D103 RD5.6MB2 HD PROTECT
Q101 2SA812 HD DRIVE 1
D601 1SS181 BIAS
D602 1SS193
IC601(1/4)
IC602(3/4)
IC601(3/4)
IC601(4/4)
IC603 74HC00 SYNC DETECT
IC603(1/2)
IC603(2/2)
D603 1SS226 PROTECT
D605 1SS226 PROTECT
IC602(1/4)
D104 RD5.6MB2 VD PROTECT
Q102 2SA812 VD DRIVE 1
Q603, 604 2SA1462 VD DRIVE 2, 3
Q607 2SA812 VD DRIVE 4
IC601(2/4)
IC601 74HC00 SELECT
IC602 74HC00 SELECT
IC602(2/4)
DO B BOARD P505
P304
ACL
G-SYNC
CLAMP
M-BLK
H-BLK
F-V CONV. VOLTAGE ADJUST
IC606(4/4)
Q616 2SC1623 RELAY DRIVE
Q615 UN2211 SIZE SW
D609 1SS181 MODE DETECT SW
D608 1SS193 PROTECT
IC605 74HC123 H-F/VCONV(+)
IC605 (1/2)
RV601 22k
D604 RD5.1MB2 M BLK SW
Q605 2SC1623 M BLK SW 2
Q606 UN221 M BLK SW 1
IC602(4/4)
RELAY ADJ BIAS
RV602 4.7k
Q614 2SC1623 F/V SW
P301
PRESET
24V
12V
H-SIZE-OUT
ACS
CCP
H-DRIVE
GND
RLY
HV PROT
HV TEST
AFC
DO D BOARD P301
L301 100μH
L302 100μH
L101 100μH
TP301
D301 1SS193 VM ADJ
Q301, 302 2SC1623 HD DRIVE 1, 2
Q303 2SA812 HD DRIVE
IC301 LA7850 H OSC
IC301(1/2)
PHASE SHIFT
SAW-TOOTH GEN.
AFC
Q306 2SC1623 FH MAX
D302 1SS193
Q304 2SA812 FH MIN 1
RV301 5k FH=Max
RV302 1M FH=Min
H OSC
X-RAY PROTECT
IC301(2/2)
Q305 2SC1623 FH MIN 2
H-DRIVE
IC101 PR-1 COMPARATOR
IC101
TP601
D303 RD9.1MB2 HV ZENER
HV-TEST
+24V
+12V

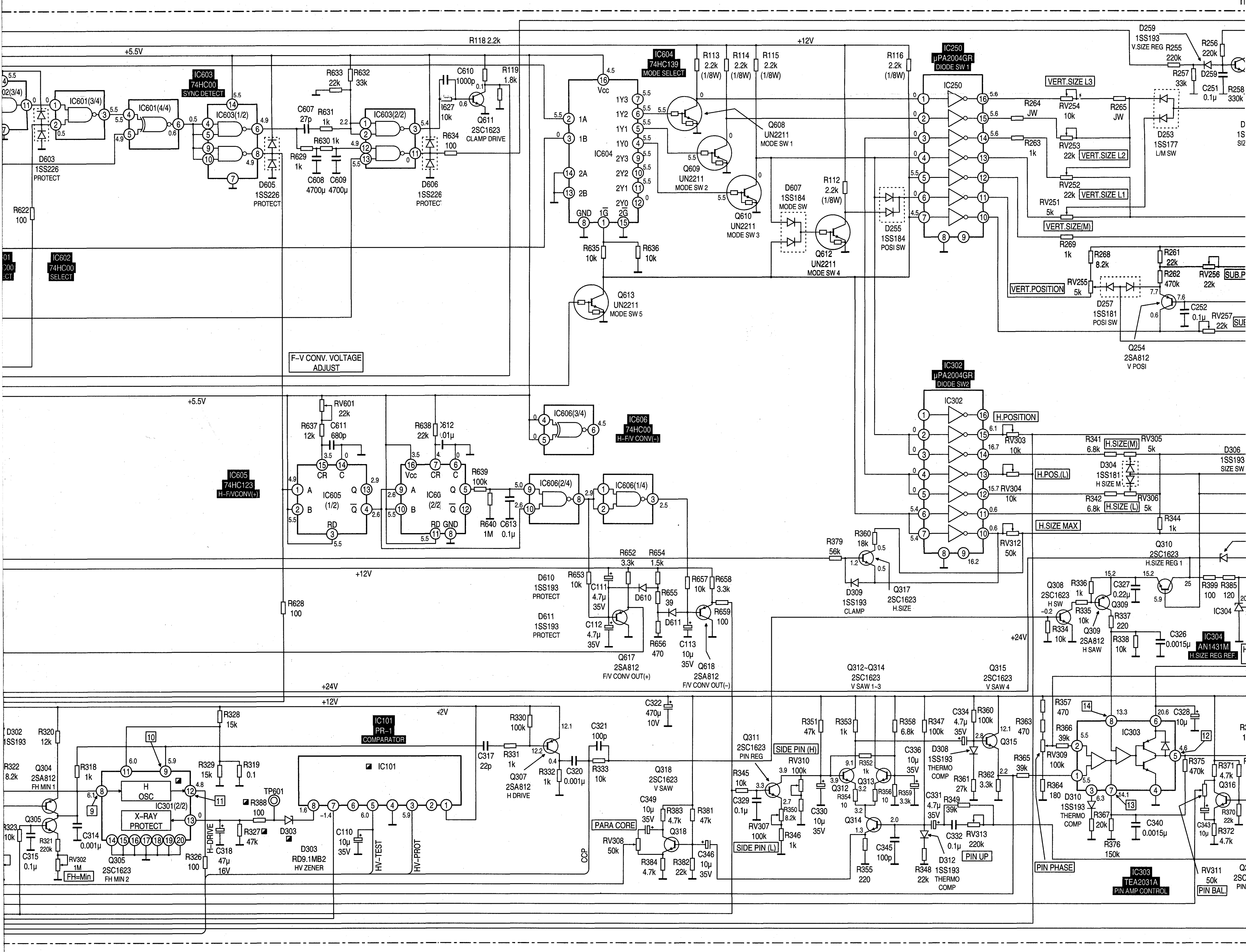


V901
PICTURE TUBE
B
DY
P501
G IN
GND
R IN
GND
B IN
GND
GND
P509
+180V
+78V
+12V
GND
P508
H1
H2

TYP	OPIS-PARAMETRY	ODPOWIEDNIKI
Układy scalone		
AN1431M	stabil.; SMD, +2.5...36V, 0.1A	
CXA1209P	lin, hi–res. Display, RGB Predriver	
LA7850	lin, CRT, stop. końcowe H i V, synchro	LA7851
TDA1670A	lin, TV, VA–System, VA–E, Pin 11=Input(+)	TDA1675A
TEA2031A	lin, CTV, E–W–Correction	
μPA2004GR	lin, SMD, 7x–npn–Darl., 60V, 0.5A, 0.9W, Rb=10.5kΩ	
μPA81C	lin, 7x–npn–Darl., 45V, 04A, 0.8W, B>1000	
μPC7812HF	stabil.; +12V, 1A	
Tranzystory	Ucbo/Ic/Ptot/ft	
2SA1091–0	Si; pnp; video, 300V, 0.1A, 0.4W, 70MHz	BF437, BF421A, 2SA1371...72
2SA1162–G	Si; pnp; 50V, 0.15A, >80MHz	BC856...857, BCW69...70, BCW89
2SA1175–HFE	Si; pnp; 60V, 0.1A, 0.25W, 180MHz	BC212, BC256, BC266, BC556
2SA1462–Y33	Si; pnp; SMD, 15V, 0.05A, 0.25W, <20/40ns	2SA1669, 2SA1778, 2SA1245
2SA1507	Si; pnp; TV–Power, 180/160V, 1.5A, 10W, 120MHz	2SA1021, 2SB649, 2SA795, 2SA1249
2SB984–K	Si; pnp; AF–Power, 120V, 1A, 1W, 100MHz	2SB647, 2SA1013, 2SB1236, 2SB1130
2SC1623–L5L6	Si; npn; SMD, 60V, 0.1A, 250MHz	2SC3143, 2SC1662A, BC846, BCV71...72
2SC2785–HFE	Si; npn; 60V, 0.1A, 0.25W, 250MHz	BC174, BC546, BC182, BC190
2SC3897	Si; npn; TV(hi–def), 1500/800V, 10A, 70W	2SC4589, 2SC4111
2SD1312–L	Si; npn; AF–Power, 120V, 1A, 1W, 120MHz	2N1893, 2SC2235, 2SD763, 2SD1743A
2SK612	MOS–FET–e; n–ch; 100V, 2A, 10W, <0.45Ω(1A)	2SK468, 2SK429...430, 2SK1283
IRF710	MOS–FET–e; n–ch; 400V, 2A, 36W, <3.6Ω(1.2A)	MTP2N40, BUZ74, 2SK382, 2SK892
IRF9630	MOS–FET–e; p–ch; 200V, 6.5A, 74W, <0.8Ω(3.9A)	
UN2211	Si; npn; SMD, Rb=Rbe=10kΩ, 50V, 0.1A, 0.4W	FA1A4M, DTC 114EK, RN 1402, 2SC3398

TYP	OPIS-PARAMETRY	ODPOWIEDNIKI
Diody		
1S1588	szybka/przeł., 35V, 0.12A, <4ns	BAW62, BAX95, 1N4148...49, 1N4151
1SS177	szybka/przeł., 55V, 0.1A, <4ns	BA318, BAX80, BAY38, 1N4148...49
1SS181	SMD, Dual, 85V, 0.1A, <4ns	BAV70
1SS184	SMD, Dual, 85V, 0.1A, <4ns	BAW56
1SS193	SMD, szybka/przeł., 85V, 0.1A, <4ns	
1SS226	SMD, Dual, 85V, 0.1A, <4ns	
1SS83	przeł., 300V, 0.2A, <100ns	
EG01	prostow./przeł., 400V, 0.7A, 100ns	BYV26B...E, BYV36B...E,RGP 10G...M
EG01Y	prostow./przeł.,70V, 1A, 100ns	BYV26B...E, BYV36A...E,RGP 10G...M
EP01C	prostow./przeł.,1000V, 0.2A, 200ns	BA159, BYT11/1000, BYT52M, BYV26E
EU(0)2(A,Z)	prostow./przeł., 200...600V, 1A, 400ns	BYD 33J...M, BYT 11/600, BYT 52J...M
EU2YX	prostow./przeł., 100V, 1.2A, 200ns	BYD 33D...M, BYT 11/600, BYT 52B...M
RD...ESB2	Z–Di; 2...120V, 0.4W, –8...+3%	BZX55/..., BZX79/..., BZX83/..., ZPD...
RD...FB2	Z–Di; 2...82V, 1W, –6...+4%	BZV85/..., BZX61/..., ZPY..., 1N4728...62
RD...MB2	Z–Di; SMD, 2.0...47V, 5%, 0.15W	BZX84/..., HZM...
RD...PB	Z–Di; SMD, 2.0..120V, 5%,1W	BZV49/...
RG2A...M	prostow./przeł., 50...1000V, 2A, <150...500ns	BY218/..., BYV37...38, BYW95...96
RP1H	prostow./przeł., 2000V, 0.1A, 200ns	BY203/20, SHG2
RU4DS	TV–Damper, 1300V, 2.5A, 400ns	BY228, BY328

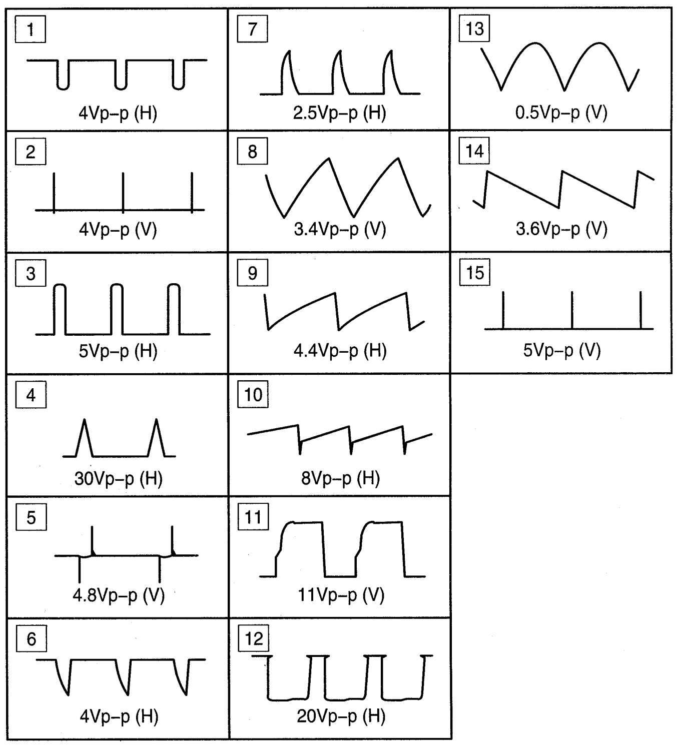
UW
1. J
V
2. J
3. F
v
4. E
r
v
5. F
r
e
r
6. F
p
F
F
c
5. E
z
n

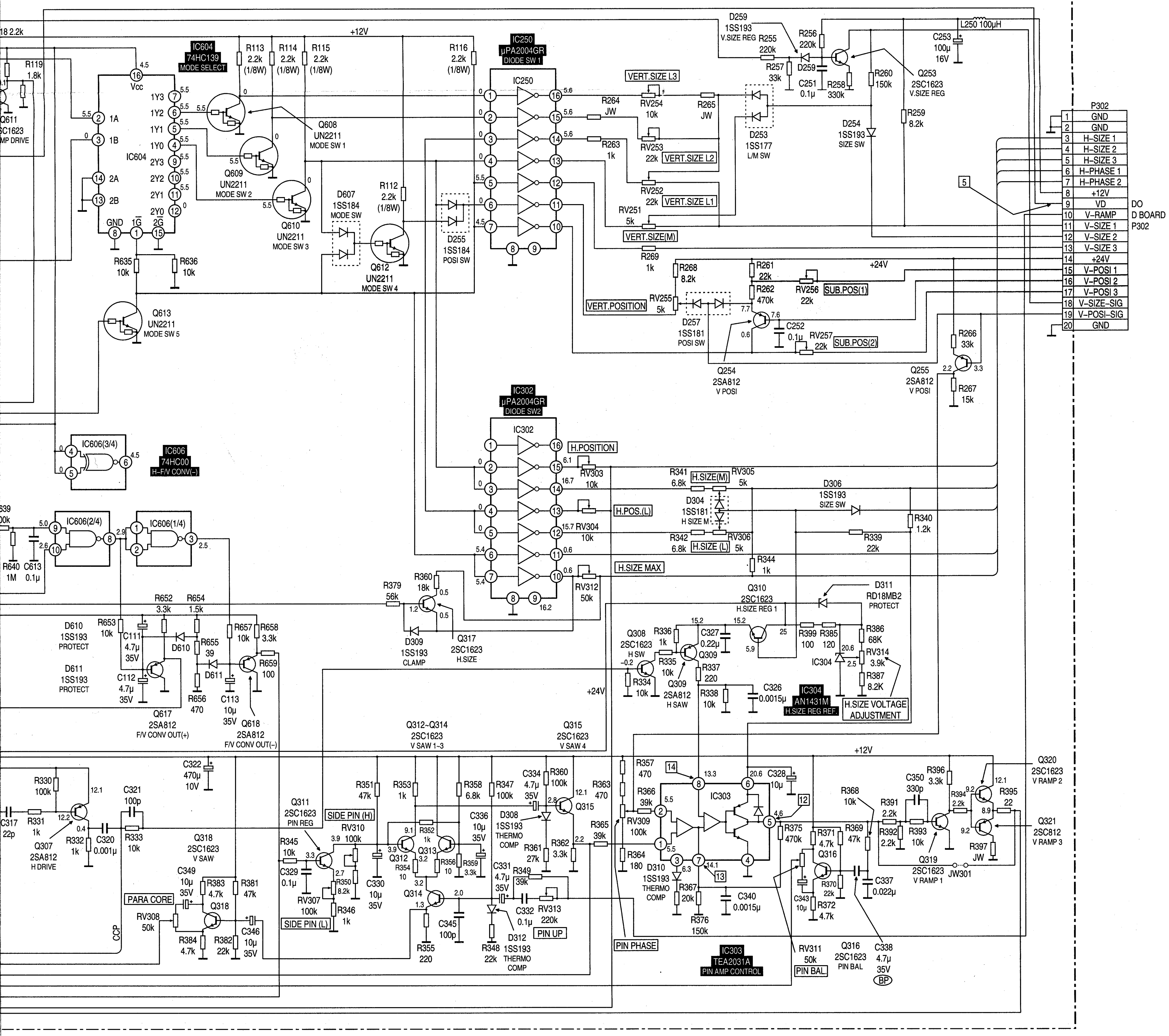


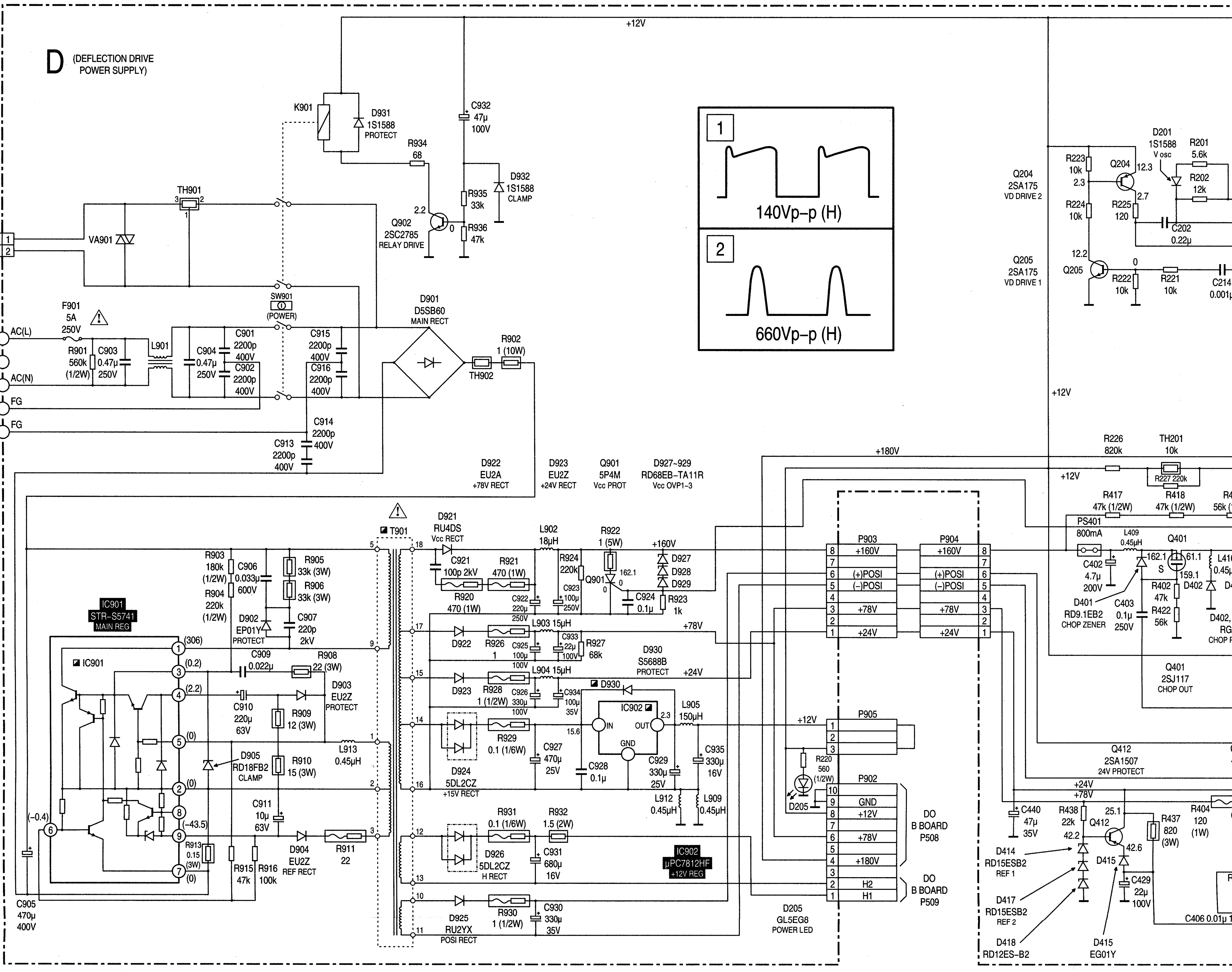
+5.5V
R118 2.2k
+12V
IC603 74HC00 SYNC DETECT
IC601(3/4)
IC601(4/4)
IC603(1/2)
IC603(2/2)
D603 1SS226 PROTECT
D605 1SS226 PROTECT
D606 1SS226 PROTECT
Q611 2SC1623 CLAMP DRIVE
IC602 74HC00 SELECT
IC604 74HC139 MODE SELECT
Q608 UN2211 MODE SW 1
Q609 UN2211 MODE SW 2
Q610 UN2211 MODE SW 3
Q612 UN2211 MODE SW 4
Q613 UN2211 MODE SW 5
D607 1SS184 MODE SW
D255 1SS184 POSI SW
IC250 μPA2004GR DIODE SW 1
VERT.SIZE L3
VERT.SIZE L2
VERT.SIZE L1
VERT.SIZE(M)
VERT.POSITION
D257 1SS181 POSI SW
Q254 2SA812 V POSI
D259 1SS193 V.SIZE REG
D253 1SS177 L/M SW
SUB.P
F-V CONV. VOLTAGE ADJUST
+5.5V
IC605 74HC123 H-F/VCONV(+)
IC606(3/4)
IC606 74HC00 H-F/V CONV(-)
IC606(2/4)
IC606(1/4)
IC302 μPA2004GR DIODE SW2
H.POSITION
H.SIZE(M)
H.POS.(L)
H.SIZE (L)
H.SIZE MAX
D304 1SS181 H SIZE M
D306 1SS193 SIZE SW
Q310 2SC1623 H.SIZE REG 1
D309 1SS193 CLAMP
Q317 2SC1623 H.SIZE
D610 1SS193 PROTECT
D611 1SS193 PROTECT
Q617 2SA812 F/V CONV OUT(+)
Q618 2SA812 F/V CONV OUT(-)
Q308 2SC1623 H SW
Q309 2SA812 H SAW
IC304 AN1431M H.SIZE REG REF
+24V
Q312~Q314 2SC1623 V SAW 1~3
Q315 2SC1623 V SAW 4
+24V
+12V
IC101 PR-1 COMPARATOR
IC301(2/2)
H OSC
X-RAY PROTECT
Q304 2SA812 FH MIN 1
Q305 2SC1623 FH MIN 2
FH=Min
H-DRIVE
D303 RD9.1MB2 HV ZENER
TP601
HV-TEST
HV-PROT
CCP
Q307 2SA812 H DRIVE
Q318 2SC1623 V SAW
PARA CORE
Q311 2SC1623 PIN REG
SIDE PIN (H)
SIDE PIN (L)
D308 1SS193 THERMO COMP
D312 1SS193 THERMO COMP
PIN UP
PIN PHASE
IC303 TEA2031A PIN AMP CONTROL
D310 1SS193 THERMO COMP
PIN BAL

OPIS-PARAMETRY	ODPOWIEDNIKI
+2.5...36V, 0.1A	
splay, RGB Predriver	
. końcowe H i V, synchro	LA7851
System, VA–E, Pin 11=Input(+)	TDA1675A
V–Correction	
-npn–Darl., 60V, 0.5A, 0.9W, Rb=10.5kΩ	
Darl., 45V, 04A, 0.8W, B>1000	
1A	
Ucbo/Ic/Ptot/ft	
, 300V, 0.1A, 0.4W, 70MHz	BF437, BF421A, 2SA1371...72
0.15A, >80MHz	BC856...857, BCW69...70, BCW89
0.1A, 0.25W, 180MHz	BC212, BC256, BC266, BC556
, 15V, 0.05A, 0.25W, <20/40ns	2SA1669, 2SA1778, 2SA1245
Power, 180/160V, 1.5A, 10W, 120MHz	2SA1021, 2SB649, 2SA795, 2SA1249
Power, 120V, 1A, 1W, 100MHz	2SB647, 2SA1013, 2SB1236, 2SB1130
, 60V, 0.1A, 250MHz	2SC3143, 2SC1662A, BC846, BCV71...72
0.1A, 0.25W, 250MHz	BC174, BC546, BC182, BC190
hi–def), 1500/800V, 10A, 70W	2SC4589, 2SC4111
Power, 120V, 1A, 1W, 120MHz	2N1893, 2SC2235, 2SD763, 2SD1743A
; n–ch; 100V, 2A, 10W, <0.45Ω(1A)	2SK468, 2SK429...430, 2SK1283
; n–ch; 400V, 2A, 36W, <3.6Ω(1.2A)	MTP2N40, BUZ74, 2SK382, 2SK892
; p–ch; 200V, 6.5A, 74W, <0.8Ω(3.9A)	
, Rb=Rbe=10kΩ, 50V, 0.1A, 0.4W	FA1A4M, DTC 114EK, RN 1402, 2SC3398

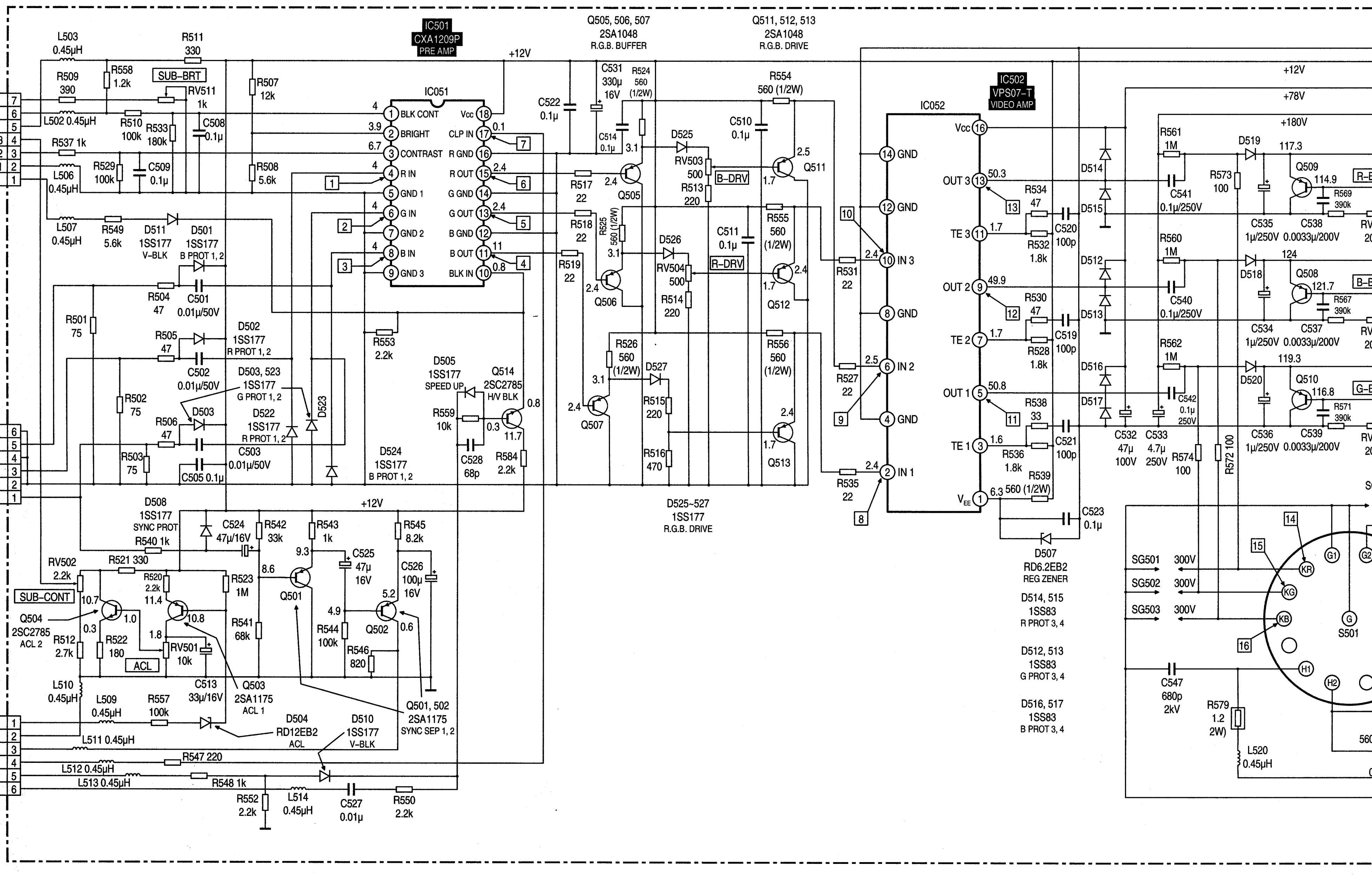
TYP	OPIS-PARAMETRY	ODPOWIEDNIKI
Diody		
1S1588	szybka/przeł., 35V, 0.12A, <4ns	BAW62, BAX95, 1N4148...49, 1N4151
1SS177	szybka/przeł., 55V, 0.1A, <4ns	BA318, BAX80, BAY38, 1N4148...49
1SS181	SMD, Dual, 85V, 0.1A, <4ns	BAV70
1SS184	SMD, Dual, 85V, 0.1A, <4ns	BAW56
1SS193	SMD, szybka/przeł., 85V, 0.1A, <4ns	
1SS226	SMD, Dual, 85V, 0.1A, <4ns	
1SS83	przeł., 300V, 0.2A, <100ns	
EG01	prostow./przeł., 400V, 0.7A, 100ns	BYV26B...E, BYV36B...E,RGP 10G...M
EG01Y	prostow./przeł.,70V, 1A, 100ns	BYV26B...E, BYV36A...E,RGP 10G...M
EP01C	prostow./przeł.,1000V, 0.2A, 200ns	BA159, BYT11/1000, BYT52M, BYV26E
EU(0)2(A,Z)	prostow./przeł., 200...600V, 1A, 400ns	BYD 33J...M, BYT 11/600, BYT 52J...M
EU2YX	prostow./przeł., 100V, 1.2A, 200ns	BYD 33D...M, BYT 11/600, BYT 52B...M
RD...ESB2	Z–Di; 2...120V, 0.4W, –8...+3%	BZX55/..., BZX79/..., BZX83/..., ZPD...
RD...FB2	Z–Di; 2..82V, 1W, –6...+4%	BZV85/..., BZX61/..., ZPY..., 1N4728...62
RD...MB2	Z–Di; SMD, 2.0..47V, 5%, 0.15W	BZX84/..., HZM...
RD...PB	Z–Di; SMD, 2.0..120V, 5%,1W	BZV49/...
RG2A...M	prostow./przeł., 50...1000V, 2A, <150...500ns	BY218/..., BYV37...38, BYW95..96
RP1H	prostow./przeł., 2000V, 0.1A, 200ns	BY203/20, SHG2
RU4DS	TV–Damper, 1300V, 2.5A, 400ns	BY228, BY328


1
4Vp–p (H)
7
2.5Vp–p (H)
13
0.5Vp–p (V)
2
4Vp–p (V)
8
3.4Vp–p (V)
14
3.6Vp–p (V)
3
5Vp–p (H)
9
4.4Vp–p (H)
15
5Vp–p (V)
4
30Vp–p (H)
10
8Vp–p (H)
5
4.8Vp–p (V)
11
11Vp–p (V)
6
4Vp–p (H)
12
20Vp–p (H)

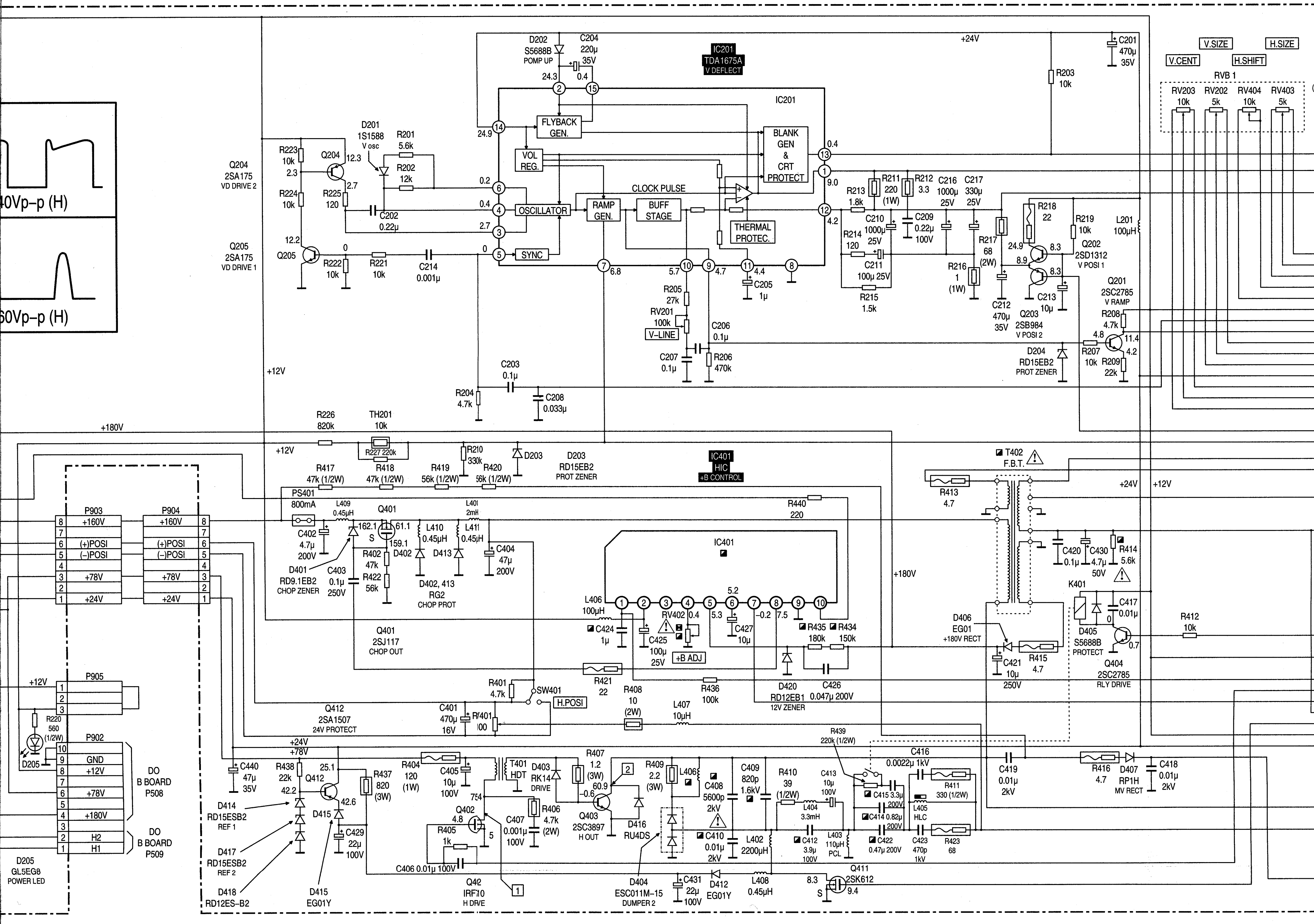

IC604
74HC139
MODE SELECT
R113 2.2k (1/8W)
R114 2.2k (1/8W)
R115 2.2k (1/8W)
+12V
R116 2.2k (1/8W)
IC250
µPA2004GR
DIODE SW 1
Q608 UN2211 MODE SW 1
Q609 UN2211 MODE SW 2
Q610 UN2211 MODE SW 3
Q612 UN2211 MODE SW 4
Q613 UN2211 MODE SW 5
D607 1SS184 MODE SW
D255 1SS184 POSI SW
R112 2.2k (1/8W)
R635 10k
R636 10k
VERT.SIZE L3
VERT.SIZE L2
VERT.SIZE L1
VERT.SIZE(M)
VERT.POSITION
RV254 10k
RV253 22k
RV252 22k
RV251 5k
R264 JW
R265 JW
R263 1k
R269 1k
D259 1SS193 V.SIZE REG
R255 220k
R256 220k
R257 33k
C251 0.1µ
R258 330k
R260 150k
Q253 2SC1623 V.SIZE REG
L250 100µH
C253 100µ 16V
D253 1SS177 L/M SW
D254 1SS193 SIZE SW
R259 8.2k
R268 8.2k
R261 22k
R262 470k
RV256 22k SUB.POS(1)
RV257 22k SUB.POS(2)
RV255 5k
D257 1SS181 POSI SW
C252 0.1µ
Q254 2SA812 V POSI
Q255 2SA812 V POSI
R266 33k
R267 15k
+24V
P302
1 GND
2 GND
3 H–SIZE 1
4 H–SIZE 2
5 H–SIZE 3
6 H–PHASE 1
7 H–PHASE 2
8 +12V
9 VD
10 V–RAMP
11 V–SIZE 1
12 V–SIZE 2
13 V–SIZE 3
14 +24V
15 V–POSI 1
16 V–POSI 2
17 V–POSI 3
18 V–SIZE–SIG
19 V–POSI–SIG
20 GND
DO
D BOARD
P302
IC302
µPA2004GR
DIODE SW2
H.POSITION
RV303 10k
H.POS.(L)
RV304 10k
H.SIZE(M)
RV305 5k
R341 6.8k
R342 6.8k
H.SIZE (L)
RV306 5k
D304 1SS181 H SIZE M
D306 1SS193 SIZE SW
R340 1.2k
R339 22k
R344 1k
H.SIZE MAX
RV312 50k
IC606(3/4)
IC606
74HC00
H–F/V CONV(–)
IC606(2/4)
IC606(1/4)
R640 1M
C613 0.1µ
R379 56k
R360 18k
D309 1SS193 CLAMP
Q317 2SC1623 H.SIZE
Q310 2SC1623 H.SIZE REG 1
D311 RD18MB2 PROTECT
R386 68K
RV314 3.9k
R387 8.2K
R399 100
R385 120
IC304
AN1431M
H.SIZE REG REF.
H.SIZE VOLTAGE ADJUSTMENT
Q308 2SC1623 H SW
Q309 2SA812 H SAW
R336 1k
C327 0.22µ
R337 220
R335 10k
R334 10k
R338 10k
C326 0.0015µ
+24V
R652 3.3k
R654 1.5k
D610 1SS193 PROTECT
D611 1SS193 PROTECT
R653 10k
C111 4.7µ
R655 39
R657 10k
R658 3.3k
R659 100
C112 4.7µ 35V
R656 470
C113 10µ 35V
Q617 2SA812 F/V CONV OUT(+)
Q618 2SA812 F/V CONV OUT(–)
Q312–Q314 2SC1623 V SAW 1–3
Q315 2SC1623 V SAW 4
C322 470µ 10V
R330 100k
C321 100p
R331 1k
C317 22p
Q307 2SA812 H DRIVE
R332 1k
C320 0.001µ
R333 10k
Q311 2SC1623 PIN REG
SIDE PIN (H)
RV310 100k
Q318 2SC1623 V SAW
C349 10µ 35V
R383 4.7k
R381 47k
PARA CORE
RV308 50k
R384 4.7k
R382 22k
C346 10µ 35V
R345 10k
C329 0.1µ
RV307 100k
SIDE PIN (L)
R346 1k
R350 8.2k
C330 10µ 35V
R351 47k
R353 1k
R352 1k
R354 10
R356 10
R359 3.3k
R355 220
C345 100p
R358 6.8k
R347 100k
C336 10µ 35V
D308 1SS193 THERMO COMP
C334 4.7µ 35V
R360 100k
R363 470
R361 27k
R362 3.3k
C331 4.7µ 35V
R349 39k
RV313 220k
PIN UP
C332 0.1µ
R348 22k
D312 1SS193 THERMO COMP
R365 39k
R357 470
R366 39k
RV309 100k
R364 180
D310 1SS193 THERMO COMP
R367 20k
C340 0.0015µ
R376 150k
IC303
TEA2031A
PIN AMP CONTROL
PIN PHASE
C328 10µ
R375 470k
R371 4.7k
R369 47k
R370 22k
R372 4.7k
C343 10µ
RV311 50k
PIN BAL
Q316 2SC1623 PIN BAL
C337 0.022µ
C338 4.7µ 35V BP
+12V
R368 10k
C350 330p
R391 2.2k
R396 3.3k
R394 2.2k
R392 2.2k
R393 10k
Q319 2SC1623 V RAMP 1
JW301
Q320 2SC1623 V RAMP 2
R395 22
Q321 2SC812 V RAMP 3
R397 JW
CCP

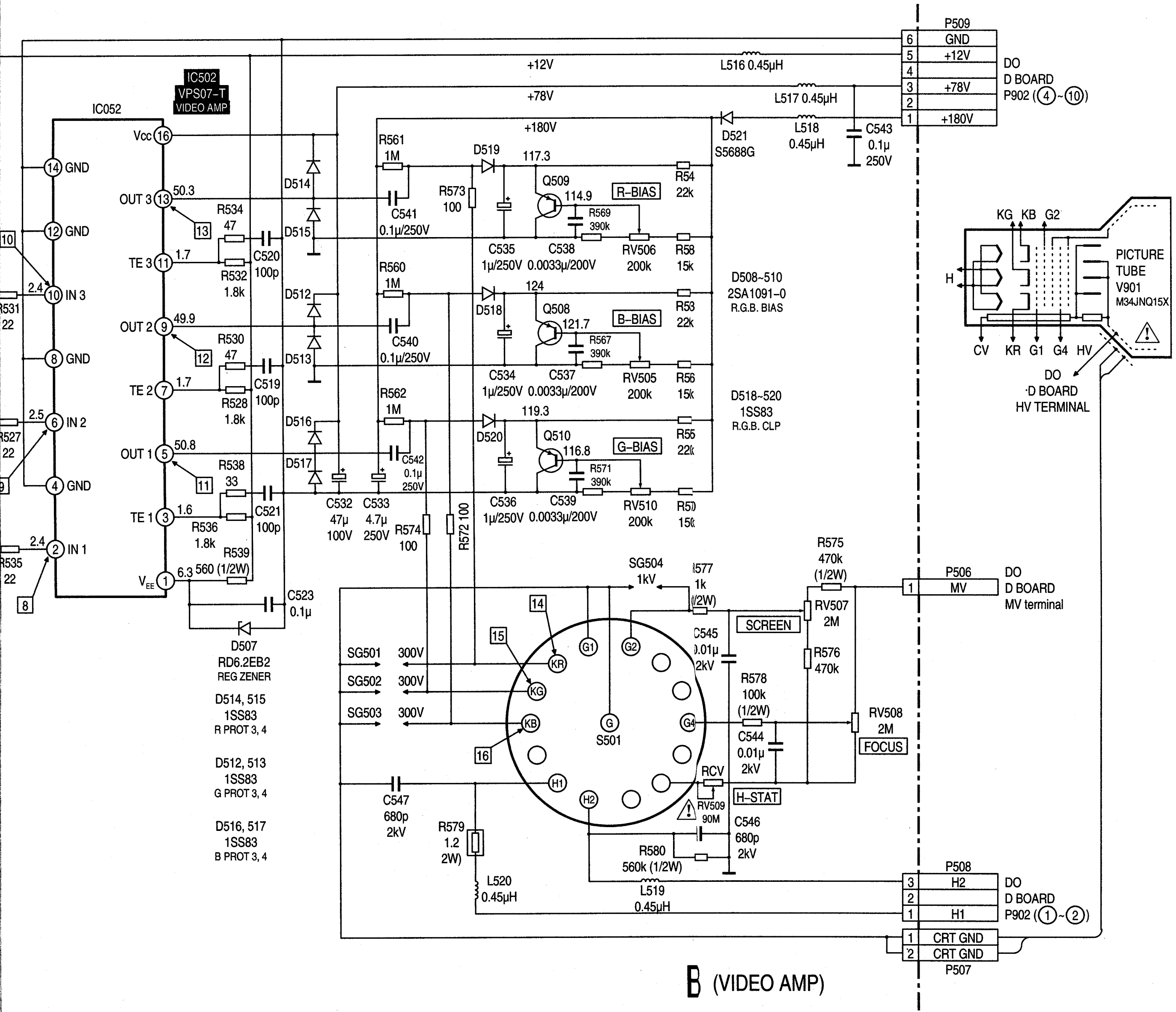


D (DEFLECTION DRIVE POWER SUPPLY)
+12V
K901
D931 1S1588 PROTECT
C932 47µ 100V
R934 68
D932 1S1588 CLAMP
R935 33k
R936 47k
Q902 2SC2785 RELAY DRIVE
TH901
DGC
P906
VA901
Z902 AC IN 3P INLET 90~264V
F901 5A 250V
R901 560k (1/2W)
C903 0.47µ 250V
L901
C904 0.47µ 250V
C901 2200p 400V
C902 2200p 400V
SW901 (POWER)
C915 2200p 400V
C916 2200p 400V
D901 D5SB60 MAIN RECT
R902 1 (10W)
TH902
AC(L)
AC(N)
FG
C914 2200p 400V
C913 2200p 400V
1
140Vp-p (H)
2
660Vp-p (H)
D922 EU2A +78V RECT
D923 EU2Z +24V RECT
Q901 5P4M Vcc PROT
D927~929 RD68EB-TA11R Vcc OVP1~3
T901
D921 RU4DS Vcc RECT
L902 18µH
R922 1 (5W)
+160V
C921 100p 2kV
R921 470 (1W)
R920 470 (1W)
R924 220k
D927 D928 D929
C924 0.1µ
R923 1k
R903 180k (1/2W)
C906 0.033µ 600V
R905 33k (3W)
R906 33k (3W)
R904 220k (1/2W)
D902 EP01Y PROTECT
C907 220p 2kV
IC901 STR-S5741 MAIN REG
L903 15µH
+78V
D922
R926 1
R927 68k
D930 S5688B PROTECT
+24V
C909 0.022µ
R908 22 (3W)
D903 EU2Z PROTECT
C910 220µ 63V
R909 12 (3W)
L904 15µH
D923
R928 1 (1/2W)
IC902
L905 150µH
R929 0.1 (1/6W)
C927 470µ 25V
C928 0.1µ
C929 330µ 25V
C935 330µ 16V
D924 5DL2CZ +15V RECT
L912 0.45µH
L909 0.45µH
D905 RD18FB2 CLAMP
R910 15 (3W)
L913 0.45µH
C911 10µ 63V
D904 EU2Z REF RECT
R911 22
R913 0.15 (3W)
R915 47k
R916 100k
C905 470µ 400V
R931 0.1 (1/6W)
R932 1.5 (2W)
D926 5DL2CZ H RECT
C931 680µ 16V
IC902 µPC7812HF +12V REG
D925 RU2YX POSI RECT
R930 1 (1/2W)
C930 330µ 35V
P903
P904
+160V
(+)POSI
(-)POSI
+78V
+24V
P905
R220 560 (1/2W)
D205
P902
GND
+12V
+78V
+180V
H2
H1
DO B BOARD P508
DO B BOARD P509
D205 GL5EG8 POWER LED
+180V
Q204 2SA175 VD DRIVE 2
Q205 2SA175 VD DRIVE 1
D201 1S1588 V osc
R201 5.6k
R202 12k
R223 10k
R224 10k
R225 120
C202 0.22µ
R222 10k
R221 10k
C214 0.001µ
R226 820k
TH201 10k
R227 220k
R417 47k (1/2W)
R418 47k (1/2W)
PS401 800mA
L409 0.45µH
Q401
C402 4.7µ 200V
D401 RD9.1EB2 CHOP ZENER
C403 0.1µ 250V
R402 47k
R422 56k
D402
Q401 2SJ117 CHOP OUT
Q412 2SA1507 24V PROTECT
C440 47µ 35V
R438 22k
R437 820 (3W)
R404 120 (1W)
D414 RD15ESB2 REF 1
D417 RD15ESB2 REF 2
D418 RD12ES-B2
D415 EG01Y
C429 22µ 100V
C406 0.01µ

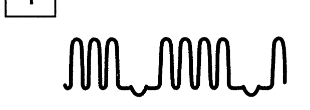


L503 0.45µH
R511 330
R558 1.2k
R509 390
SUB-BRT
RV511 1k
R507 12k
IC501 CXA1209P PRE AMP
+12V
Q505, 506, 507 2SA1048 R.G.B. BUFFER
Q511, 512, 513 2SA1048 R.G.B. DRIVE
P504
EXT-BRT 3
EXT-BRT 2
EXT-BRT 1
EXT-CONT 3
EXT-CONT 2
EXT-CONT 1
V-BLK
DO D BOARD P202
L502 0.45µH
R510 100k
R533 180k
C508 0.1µ
R537 1k
L506 0.45µH
R529 100k
C509 0.1µ
R508 5.6k
IC051
BLK CONT
BRIGHT
CONTRAST
R IN
GND 1
G IN
GND 2
B IN
GND 3
Vcc
CLP IN
R GND
R OUT
G GND
G OUT
B GND
B OUT
BLK IN
C522 0.1µ
C531 330µ 16V
R524 560 (1/2W)
C514 0.1µ
D525
RV503 500
R513 220
B-DRV
C510 0.1µ
R554 560 (1/2W)
Q511
Q505
R517 22
R518 22
R519 22
R525 560 (1/2W)
D526
RV504 500
R514 220
R-DRV
C511 0.1µ
R555 560 (1/2W)
Q512
Q506
R526 560 (1/2W)
D527
R515 220
R516 470
R556 560 (1/2W)
Q507
Q513
D525~527 1SS177 R.G.B. DRIVE
L507 0.45µH
R549 5.6k
D511 1SS177 V-BLK
D501 1SS177 B PROT 1, 2
R504 47
C501 0.01µ/50V
R501 75
R505 47
D502 1SS177 R PROT 1, 2
C502 0.01µ/50V
D503, 523 1SS177 G PROT 1, 2
D522 1SS177 R PROT 1, 2
R502 75
R506 47
D503
D523
R503 75
C505 0.1µ
C503 0.01µ/50V
R553 2.2k
D505 1SS177 SPEED UP
Q514 2SC2785 H/V BLK
R559 10k
C528 68p
R584 2.2k
D524 1SS177 B PROT 1, 2
P501
GND
B IN
GND
R IN
GND
G IN
DO P3 (D-SUB 15P)
D508 1SS177 SYNC PROT
R540 1k
C524 47µ/16V
R542 33k
R543 1k
R545 8.2k
RV502 2.2k
R521 330
R520 2.2k
R523 1M
C525 47µ 16V
C526 100µ 16V
Q501
Q502
SUB-CONT
Q504 2SC2785 ACL 2
R512 2.7k
R522 180
RV501 10k
ACL
R541 68k
R544 100k
R546 820
L510 0.45µH
L509 0.45µH
R557 100k
C513 33µ/16V
Q503 2SA1175 ACL 1
Q501, 502 2SA1175 SYNC SEP 1, 2
P505
ACL
GND
G-SYNC
CLAMP
M-BLK
H-BLK
DO DA (DC-1) BOARD P304
L511 0.45µH
D504 RD12EB2 ACL
D510 1SS177 V-BLK
L512 0.45µH
R547 220
L513 0.45µH
R548 1k
R552 2.2k
L514 0.45µH
C527 0.01µ
R550 2.2k
IC052
IC502 VPS07-T VIDEO AMP
GND
IN 3
IN 2
IN 1
Vcc
OUT 3
TE 3
OUT 2
TE 2
OUT 1
TE 1
VEE
R531 22
R527 22
R535 22
R534 47
R532 1.8k
C520 100p
R530 47
R528 1.8k
C519 100p
R538 33
R536 1.8k
C521 100p
R539 560 (1/2W)
C523 0.1µ
D507 RD6.2EB2 REG ZENER
D514, 515 1SS83 R PROT 3, 4
D512, 513 1SS83 G PROT 3, 4
D516, 517 1SS83 B PROT 3, 4
+12V
+78V
+180V
R561 1M
D519
R573 100
Q509
C541 0.1µ/250V
C535 1µ/250V
C538 0.0033µ/200V
R569 390k
R560 1M
D518
Q508
R567 390k
C540 0.1µ/250V
C534 1µ/250V
C537 0.0033µ/200V
R562 1M
D520
Q510
R571 390k
C542 0.1µ 250V
C532 47µ 100V
C533 4.7µ 250V
R574 100
R572 100
C536 1µ/250V
C539 0.0033µ/200V
SG501 300V
SG502 300V
SG503 300V
KR
KG
KB
G1
G2
S501
H1
H2
C547 680p 2kV
R579 1.2 2W
L520 0.45µH


40Vp-p (H)
60Vp-p (H)
IC201
TDA1675A
V DEFLECT
D202 S5688B POMP UP
C204 220μ 35V
+24V
C201 470μ 35V
R203 10k
FLYBACK GEN.
VOL REG.
OSCILLATOR
RAMP GEN.
BUFF STAGE
CLOCK PULSE
SYNC
BLANK GEN & CRT PROTECT
THERMAL PROTEC.
D201 1S1588 V osc
Q204 2SA175 VD DRIVE 2
Q205 2SA175 VD DRIVE 1
C202 0.22μ
C214 0.001μ
RV201 100k V-LINE
C206 0.1μ
R206 470k
C203 0.1μ
C208 0.033μ
R204 4.7k
Q202 2SD1312 V POSI 1
Q203 2SB984 V POSI 2
Q201 2SC2785 V RAMP
D204 RD15EB2 PROT ZENER
L201 100μH
V.SIZE
H.SIZE
V.CENT
H.SHIFT
RVB 1
RV203 10k
RV202 5k
RV404 10k
RV403 5k
+12V
+180V
R226 820k
TH201 10k
R227 220k
R210 330k
D203 RD15EB2 PROT ZENER
IC401 HIC +B CONTROL
PS401 800mA
Q401 2SJ117 CHOP OUT
D401 RD9.1EB2 CHOP ZENER
D402, 413 RG2 CHOP PROT
P903
P904
+160V
(+)POSI
(-)POSI
+78V
+24V
P905
P902
GND
H2
H1
DO B BOARD P508
DO B BOARD P509
D205 GL5EG8 POWER LED
RV402 +B ADJ
D420 RD12EB1 12V ZENER
SW401 H.POSI
Q412 2SA1507 24V PROTECT
T402 F.B.T.
D406 EG01 +180V RECT
D405 S5688B PROTECT
Q404 2SC2785 RLY DRIVE
K401
R412 10k
T401 HDT
D403 RK14 DRIVE
Q402 IRF630 H DRIVE
Q403 2SC3897 H OUT
D416 RU4DS
D404 ESC011M-15 DUMPER 2
D412 EG01Y
Q411 2SK612
D414 RD15ESB2 REF 1
D417 RD15ESB2 REF 2
D418 RD12ES-B2
D415 EG01Y
L404 3.3mH
L403 110μH PCL
L405 HLC
L402 2200μH
D407 RP1H MV RECT
C416 0.0022μ 1kV
C419 0.01μ 2kV
C418 0.01μ 2kV

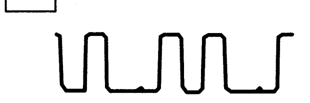

IC502
VPS07-T
VIDEO AMP
IC052
GND
Vcc
OUT 3
TE 3
IN 3
OUT 2
TE 2
IN 2
OUT 1
TE 1
IN 1
VEE
P509
GND
+12V
+78V
+180V
DO D BOARD P902 (④-⑩)
L516 0.45μH
L517 0.45μH
L518 0.45μH
C543 0.1μ 250V
D521 S5688G
Q509
Q508
Q510
R-BIAS
B-BIAS
G-BIAS
RV506 200k
RV505 200k
RV510 200k
D508-510 2SA1091-0 R.G.B. BIAS
D518-520 1SS83 R.G.B. CLP
D507 RD6.2EB2 REG ZENER
D514, 515 1SS83 R PROT 3, 4
D512, 513 1SS83 G PROT 3, 4
D516, 517 1SS83 B PROT 3, 4
PICTURE TUBE V901 M34JNQ15X
KG KB G2
CV KR G1 G4 HV
DO D BOARD HV TERMINAL
SG504 1kV
SG501 300V
SG502 300V
SG503 300V
S501
SCREEN
RV507 2M
RV508 2M FOCUS
H-STAT
RV509 90M
P506
MV
DO D BOARD MV terminal
P508
H2
H1
DO D BOARD P902 (①-②)
P507
CRT GND
B (VIDEO AMP)

1



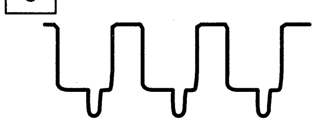
0.7Vp-p (H)

2



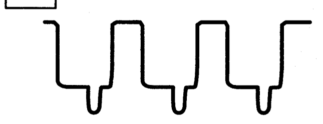
0.7Vp-p (H)

3



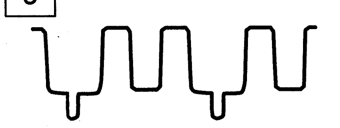
1Vp-p (H)

4



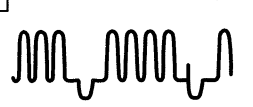
3Vp-p (H)

5



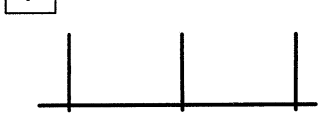
3Vp-p (H)

6



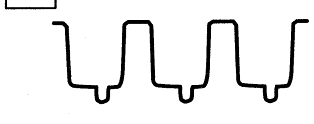
3Vp-p (H)

7

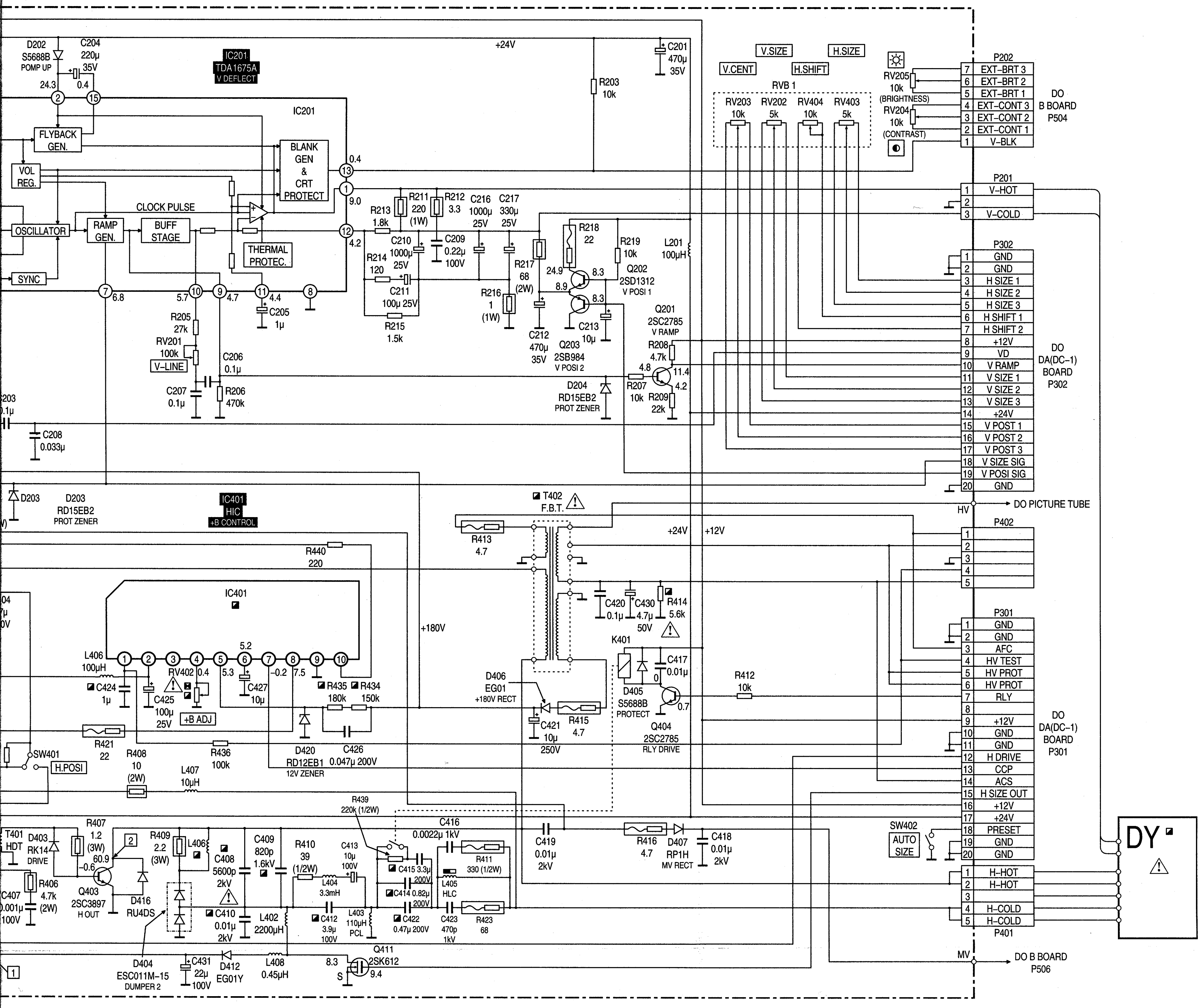


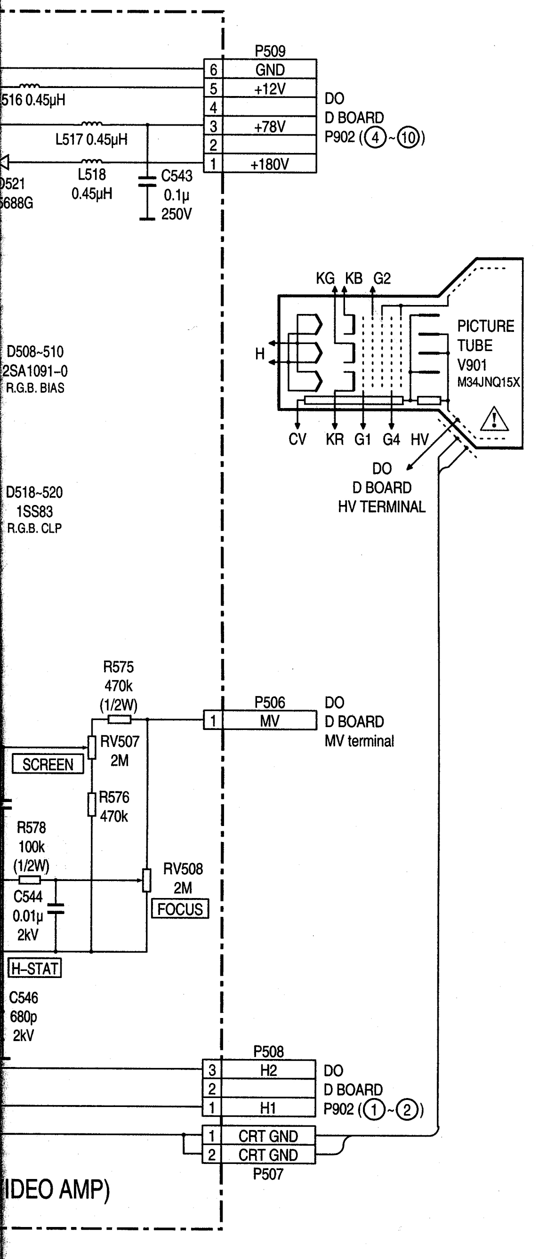
5Vp-p (H)

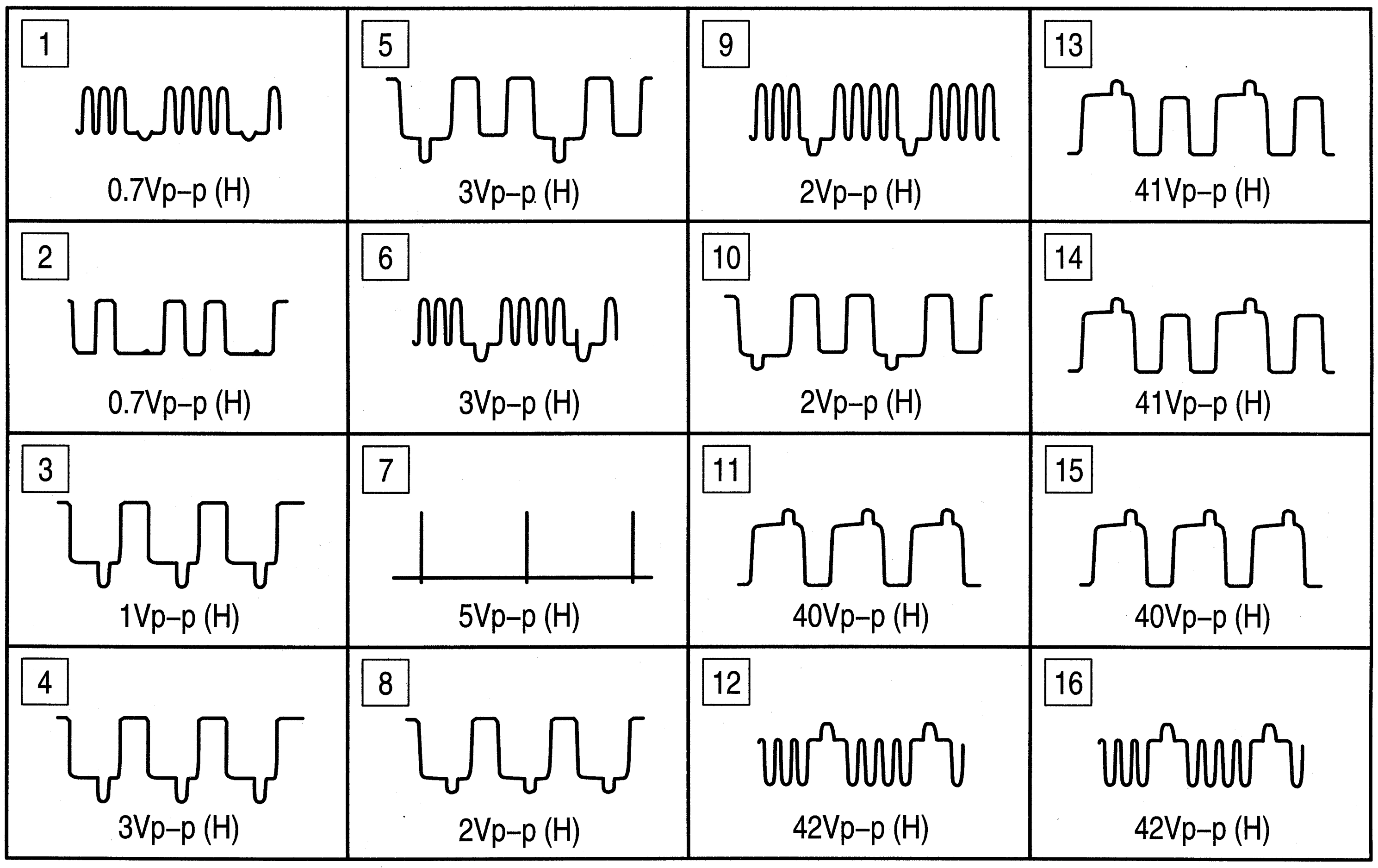
8



2Vp-p (H)


IC201
TDA1675A
V DEFLECT
D202
S5688B
POMP UP
C204
220µ
35V
24.3
0.4
FLYBACK GEN.
VOL REG.
OSCILLATOR
SYNC
RAMP GEN.
CLOCK PULSE
BUFF STAGE
BLANK GEN & CRT PROTECT
THERMAL PROTEC.
+24V
C201
470µ
35V
R203
10k
R213 1.8k
R211 220 (1W)
R212 3.3
C216 1000µ 25V
C217 330µ 25V
R214 120
C210 1000µ 25V
C209 0.22µ 100V
C211 100µ 25V
R215 1.5k
R218 22
R219 10k
Q202 2SD1312 V POSI 1
R217 68 (2W)
R216 1 (1W)
C212 470µ 35V
C213 10µ
Q203 2SB984 V POSI 2
L201 100µH
Q201 2SC2785 V RAMP
R208 4.7k
R207 10k
R209 22k
D204 RD15EB2 PROT ZENER
R205 27k
RV201 100k
V-LINE
C206 0.1µ
C207 0.1µ
R206 470k
C205 1µ
C208 0.033µ
V.SIZE
H.SIZE
V.CENT
H.SHIFT
RVB 1
RV203 10k
RV202 5k
RV404 10k
RV403 5k
RV205 10k (BRIGHTNESS)
RV204 10k (CONTRAST)
P202
7 EXT-BRT 3
6 EXT-BRT 2
5 EXT-BRT 1
4 EXT-CONT 3
3 EXT-CONT 2
2 EXT-CONT 1
1 V-BLK
DO B BOARD P504
P201
1 V-HOT
2
3 V-COLD
P302
1 GND
2 GND
3 H SIZE 1
4 H SIZE 2
5 H SIZE 3
6 H SHIFT 1
7 H SHIFT 2
8 +12V
9 VD
10 V RAMP
11 V SIZE 1
12 V SIZE 2
13 V SIZE 3
14 +24V
15 V POST 1
16 V POST 2
17 V POST 3
18 V SIZE SIG
19 V POSI SIG
20 GND
DO DA(DC-1) BOARD P302
D203 RD15EB2 PROT ZENER
IC401 HIC +B CONTROL
R440 220
IC401
L406 100µH
C424 1µ
C425 100µ 25V
RV402
+B ADJ
C427 10µ
R435 180k
R434 150k
D420 RD12EB1 12V ZENER
C426 0.047µ 200V
R421 22
R408 10 (2W)
R436 100k
L407 10µH
SW401
H.POSI
+180V
T402 F.B.T.
R413 4.7
+24V
+12V
HV
DO PICTURE TUBE
P402
C420 0.1µ
C430 4.7µ 50V
R414 5.6k
K401
C417 0.01µ
D405 S5688B PROTECT
Q404 2SC2785 RLY DRIVE
R412 10k
D406 EG01 +180V RECT
C421 10µ 250V
R415 4.7
P301
1 GND
2 GND
3 AFC
4 HV TEST
5 HV PROT
6 HV PROT
7 RLY
8
9 +12V
10 GND
11 GND
12 H DRIVE
13 CCP
14 ACS
15 H SIZE OUT
16 +12V
17 +24V
18 PRESET
19 GND
20 GND
DO DA(DC-1) BOARD P301
SW402 AUTO SIZE
DY
P401
1 H-HOT
2 H-HOT
3
4 H-COLD
5 H-COLD
T401 HDT
D403 RK14 DRIVE
R407 1.2 (3W)
R409 2.2 (3W)
Q403 2SC3897 H OUT
R406 4.7k (2W)
C407 0.001µ 100V
D416 RU4DS
C408 5600p 2kV
C409 820p 1.6kV
R410 39 (1/2W)
C410 0.01µ 2kV
L402 2200µH
R439 220k (1/2W)
C413 10µ 100V
L404 3.3mH
C412 3.9µ 100V
L403 110µH PCL
C415 3.3µ 200V
C414 0.82µ 200V
C422 0.47µ 200V
C416 0.0022µ 1kV
R411 330 (1/2W)
L405 HLC
C423 470p 1kV
R423 68
C419 0.01µ 2kV
R416 4.7
D407 RP1H MV RECT
C418 0.01µ 2kV
D404 ESC011M-15 DUMPER 2
C431 22µ 100V
D412 EG01Y
L408 0.45µH
Q411 2SK612
MV
DO B BOARD P506


P509
6 GND
5 +12V
4
3 +78V
2
1 +180V
DO D BOARD P902 (④-⑩)
L516 0.45µH
L517 0.45µH
L518 0.45µH
C543 0.1µ 250V
KG KB G2
PICTURE TUBE V901 M34JNQ15X
H
CV KR G1 G4 HV
DO D BOARD HV TERMINAL
D508-510 2SA1091-0 R.G.B. BIAS
D518-520 1SS83 R.G.B. CLP
R575 470k (1/2W)
RV507 2M
R576 470k
SCREEN
R578 100k (1/2W)
C544 0.01µ 2kV
RV508 2M
FOCUS
H-STAT
C546 680p 2kV
P506
1 MV
DO D BOARD MV terminal
P508
3 H2
2
1 H1
DO D BOARD P902 (①-②)
1 CRT GND
2 CRT GND
P507
IDEO AMP)


1
0.7Vp-p (H)
5
3Vp-p (H)
9
2Vp-p (H)
13
41Vp-p (H)
2
0.7Vp-p (H)
6
3Vp-p (H)
10
2Vp-p (H)
14
41Vp-p (H)
3
1Vp-p (H)
7
5Vp-p (H)
11
40Vp-p (H)
15
40Vp-p (H)
4
3Vp-p (H)
8
2Vp-p (H)
12
42Vp-p (H)
16
42Vp-p (H)

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